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Unknowledge Economies:
Digital discourse and its effect in
potentially rendering all information
effectively subjective

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PhD

2016

Unknowledge Economies:
Digital discourse and its effect in
potentially rendering all information
effectively subjective

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A thesis submitted in partial fulfilment of
the requirements of the University of
Northumbria at Newcastle for the degree
of Doctor of Philosophy

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Abstract

This research project critically explores the manner in which online interaction between individuals affects their understanding of information and what this means for the meaning of information within this context. In order to examine these interactions and their effects the research question asked is: To what extent is digital discourse within the context of the online information explosion rendering all information effectively subjective?

The aims of the research were to investigate the relationship between individuals and information and to develop a conceptual framework through which to understand this relationship. Coupled with this concept of interpretative methodology within this research is the idea of Verstehen as a way of developing an understanding of language and behaviour.

As the research required public online discourse surrounding an information rich topic it was decided that the issue of climate change would meet these needs. It is an issue which is steeped in debate and that features a significant volume of publicly available information in the form of official statistics, reports and projections as well as widespread media coverage.

The analysis of this data highlighted the prominence of certain key elements, such as notable individuals who can be seen taking on roles which direct the discourse shaping it either through the comments they make or the information which they share. This generative role-taking plays into the idea that social validation and the perceived credibility of an individual are vital to the impact which they can have on a discussion and in their ability to shape the opinions of others.

The contribution to knowledge can be found in the relationships with the discourse with regard to the issue of who constructs meaning for a piece of information; reconceptualising who is regarded as owning a source and who is regarded as credible in an online social context.

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Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved.

Approval has been sought and granted by the University Ethics Committee on 08/04/2013.

I declare that the Word Count of this Thesis is 50,497 words

Name: Robert Stewart Hunter

Signature: R.S. Hunter

Date: 12/09/2017

Chapter One

Introduction

1.1 Introduction

The internet is an infrastructure which was heralded as a major breakthrough in the way society would come to consume information. Observers and commentators looked forward to a day when those who used it would have all of the world's knowledge at their fingertips and available for access without traditional gatekeepers managing or restricting access. This great democratisation of information has been realised in the form of projects such as Wikipedia, the expansion of citizen journalism and has been credited with contributing to the revolutions which have come to be defined by their relationship to social media, interactivity between news and those who engage with it, is encouraged through 'below the line' commenting platforms embedded on many news websites both major and obscure. In addition to allowing individuals to comment upon and provide feedback on information from traditional sources the internet has allowed consumers to become creators of information. News producers now frequent ask their audience to provide content as well as comment to accompany breaking stories or analysis of events. It is not just in the interaction between traditional reporting and the public where previously passive users can engage with and contribute to the information environment of modern society. The ability to establish a personal brand or contribute to other online resources means that previous norms regarding access and authority need to be reassessed, to develop a contemporary understanding of how information exists within this context. If information is no longer curated by traditional gatekeepers, or produced by traditional conceptualisations of authoritative sources then what role do these sources, and gatekeepers still play and what is the relationship with the public when it comes to information online?

1.2 Problem Statement

As Howard Rheingold said in an interview in 2010, "information is no longer unquestionable. It's up to the consumer of the information, not the publisher of the

information to test the authenticity of that information ... that's a radical change" (Rowell, 2010). This radical change, where the individual must authenticate that which they consume, rather than trusting the validity of information as they may once have done is a multifaceted problem. Individuals now must be exceptionally vigilant in seeking information as poor information, misinformation and deliberately misleading sources could now exist seemingly equivalent with one another to a degree which they previously did not.

It is from this uncertainty over the authenticity of information which the concept of 'unknowledge economy' originates. It is related to ideas of misinformation, albeit from the starting position that it is not malice which leads to misinformation or poor understanding of online information. The nature of online information, coupled with the changes in who the gatekeepers are and the information literacy of the public, has resulted in the potential for confusion and dispute in a way that may not have occurred before. The term 'unknowledge' has been used to describe another concept within the discipline of economics related to novelty and limits of understanding when new disruptive influences such as technological innovation enter the economy. Within this research the term 'unknowledge' refers to the clouding of understanding which may occur when traditional modes of information verification break down or are made more difficult by the changes in authentication which Rheingold highlighted.

As well as a shift that sees authentication of information move from the supplier to consumer side the volume of information available online has exploded with a 37% increase in traffic in 2014 and predictions that by the end of 2016 internet traffic will be almost one billion gigabytes per month (Cisco, 2016). An increasingly large proportion of this traffic comes from Web 2.0 and social sharing websites, the potential consequences of a change in information availability as a result of online discourse has been noted by professionals who deal with the public's information needs such as librarians (Farkas, 2011). While online sources could open up near limitless amounts of information for individuals to consume doubts have been raised about the abilities of individuals to find the clearest or 'best' information (Vraga et al., 2011, Miller and Bartlett, 2012).

This rise in the potential for uncertainty regarding the validity of information has come at the same time as home internet access in the UK has increased from 10% to 80% of households between 1998 and 2012 (ONS, 2012) and trends in the US suggesting that the internet is becoming a primary source of information for an increasingly large section of the population (Pew Research Center, 2012). Within this context authors are investigating the role of social media as an information resource (Westerman et al., 2014), the role individuals play in being creators as well as consumers of information (Brake, 2013), and the manner in which individuals present themselves online (Schwämmlein and Wodzicki, 2012). This research, in addressing a particular aspect of online communication, sought to examine the intersection of these research interests.

1.3 Research Aims and Objectives

The aim was to develop a conceptual understanding through which the multifarious roles of the individual in the context of the unknowledge economy could be better understood. This takes the form of a critical exploration of the relationship between information and the individual through interactions within digital discourse.

In order to address these aims the research objectives were to:

- Define key concepts of terminology in the context of this research; including unknowledge economy, digital discourse, effective subjectivity, trust and other key terms which were to be developed throughout the course of the study
- Critically analyse the nature of opinion and debate within digital discourse and its role in defining the character of the unknowledge economy
- Explore the cognitive and affective reactions of individuals in response to digital discourse and the unknowledge economy
- Examine the role of individuals as creators and consumers in the production and distribution of the unknowledge economy
- Explore the extent to which individuals are finding it difficult to make the distinction between 'facts' and 'falsehoods' in the context of digital discourse
- Evaluate the role of social media in legitimising information for individuals in the unknowledge economy

1.4 Structure of This Thesis

The research critically examines one particular example of digital discourse in order to investigate whether or not, and if so how, the interactions that individuals have online affects their understanding of the integrity of information has and what are the consequences for the meaning of this information. The thesis is divided into four main sections. The first is a review of the existing academic literature on the subject covering issues of information literacy, digital and media literacy, trust in information, the role of the individual online and the role social media is taking.

The second is the methodology which presents the philosophy behind the research and explanations of the methods and processes used in the research design. This section also includes a report on a pilot study which was conducted to test the methods and tools which were to be used in the data collection, management and analysis during this research. The resultant changes made to the research design based on the experience of the pilot study is contained within this report as well as a further adaptation which was the result of an external factor impacting on the data collection.

The third section presents the data analysis for the main study. The first part of this section includes a discussion of the data set, analysis of the timeline of contributions made by the individuals who were engaged in the discourse, a breakdown of the forms of information shared within the forum that was the focus of the study and analysis of the way they are used. The second part of the analysis focuses upon the individuals themselves, the contribution they make and their behaviour towards each other and the information and topics with which they engage.

The fourth section is the discussion of the findings, this chapter brings together the work of the analysis and the themes from the literature review and using the parameters set in the methodology seeks to understand what is happening within the discourse and respond to the research problem by addressing the aims and objectives.

The concluding section draws together the research findings and seeks to place their contribution to knowledge within the wider research field while also identifying avenues for future research based upon the understanding developed during the research.

Chapter Two

Literature Review

2.1 Introduction

In addressing the central issue at the core of the research concerns of this PhD there are several key themes within the library and information science discipline which were investigated. In order to understand how the online relationship between individuals using information, and the manner in which information is used affects the meaning and understanding of what information is, it was first important to revisit concepts of how individuals interact with information in a broader sense and in the offline world. In this chapter the key themes reviewed are existing work on information literacy and how concepts of the manner in which individuals interact with information have evolved; digital literacy and how individuals understand and navigate the online environment; and models and studies into trust and misinformation, including how individuals come to believe the information that they do and the factors which affect this. The final key area is the role of the individual in the online environment. These themes form a complex multifaceted literature as the evolution of the individuals' place keeps pace with the evolution of the digital space itself. Having examined the key themes from these strands of the literature there follows a section which distils this understanding into a working conceptual framework. This framework comprises the two central concepts around which this research was built - the individual as an actor in an information environment, and a definition of information as it was conceptualised within this project.

2.2 Information literacy

At the root of any research regarding the public's understanding and use of information is the issue of information literacy. What are the cognitive tools which are available to individuals in relation to their approaches to information, and how have researchers been able to analyse, understand and model these tools? In an attempt

to understand the process of how individuals come to understand the information that they consume, researchers and practitioners have developed several models of information literacy.

The Chartered Institute of Library and Information Professionals (CILIP) website (CILIP, 2014a) contains the following statement setting out the information literacy principles which it holds:

“The Alexandria Proclamation believes information literacy lies at the core of lifelong learning. It believes information literacy empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals.” (CILIP, 2014c)

This statement provides a useful basis as to what information literacy can mean for the general public and the goals of those who work toward supporting this ability. CILIP (2014a) goes on to define information literacy as being characterised by eight elements. These begin with understanding the need for information and progressing through degrees of competency through knowing how to find information, evaluate its worth, how to communicate it and how to manage the findings of one's research. The characteristics from CILIP (2014b) are as listed below:

- A need for information
- The resources available
- How to find information
- The need to evaluate results
- How to work with or exploit results
- Ethics and responsibility of use
- How to communicate or share your findings
- How to manage your findings

The SCONUL (2016) model of information literacy, while being defined by many of the same qualities as the CILIP characteristics, is rooted in an idea that information is not linear. Instead it places within the context of an information landscape seven pillars which define an information literate individual:

1. Identify
2. Scope
3. Plan
4. Gather
5. Evaluate
6. Manage
7. Present

Each pillar represents a core skill required for an individual to be information literate. Although presented in a non-linear fashion within a holistic illustration of the model, it is clear that the SCONUL model follows a similar path to understanding as the CILIP model. This path sees the need for information is identified then a problem framed, a plan made, information retrieved, assessed, and to demonstrate it has been understood, communicated.

Similarly, the Big6 (2014) model of information literacy describes a similar understanding:

- Task Definition
- Information Seeking Strategies
- Location and Access
- Use of Information
- Synthesis
- Evaluation

These models of information literacy are all practice based and, as such, deal with the behaviour as recognised by those, such as librarians, who engage with the information needs of the general public on a daily basis. This focus on public information literacy and real world needs is important to this research as the focus was on the lived experience of information consumption, discussion and distribution within a social setting.

These models all provide a formal understanding of the intellectual process an individual will follow as they put their personal information literacy skills into practice. In this form they could also be useful as a training aid for the development of information literacy skills, with all three of the processes above following the same pattern. This clarity is ideal as a set of guiding principles, high level headline actions and processes which describe information literacy as it is actioned in problem solving and searching for new information. However, given that information needs are context driven, it seems likely that these needs could be messy and ill-defined; in these cases the models could fail to illustrate the process by which an inexperienced individual pursues their particular information need. A high level information literate individual following the steps described by these models, with clear aims and objectives regarding the information that they are seeking, may very well behave differently to an inexperienced individual who does not have the same level of information literacy. The scenarios of messy and ill-defined information needs may also result in steps in this process being bypassed or ignored. While this thesis is an investigation into a messy information need environment, the context driven nature of information needs means that information literacy could go in another direction. This context driven need for information and the reasons for the use of information could also result in the development of very narrow information skills.

Lloyd (2011) seeks to ground information literacy within practice and the workplace in her work and illustrates several key lessons which can be learned from this experience:

- Context creates difference – in workplaces information literacy and the knowledge which it leads to are considered secondary to the practical needs of the workplace, leading to complex and unstructured information environments
- Information and knowledge are a collective possession – knowledge is not owned by any particular individual within a workplace, instead it is disseminated, shared and available to those who need it as they do
- Transferability of information literacy – a problem with information literacy as a learnt skill can be a lack of transferability. If specific environments, such as

school or the workplace, require tailored skillsets then it seems appropriate for researchers to recognise that their subjects' information literacy may be particularly suited to certain environments, and should be engaged with on their own terms.

It is as an extension of these points, perhaps particularly the final one, which leads Lloyd (2011) to seek to reconceptualise and theorise information literacy as it is experienced in lived practice. This focus on the lived experience in the workplace which Lloyd (2012) labels as a 'people-in-practice' approach, is an attempt to move information literacy studies away from a focus on skills and towards application in socio-cultural settings. This desire to move information literacy away from lists of applicable skills and into investigations of practice is coupled with literature which examines studies regarding the delivery of information literacy interventions discussed below. These interventions are instances in which information literacy skills and best practice can be brought to the participants and the impact of teaching or studying these skills assessed.

While this is not a new strand to the literature it is one which tracks the evolution of information literacy well as many of the studies, although unrelated, focus their investigations on comparable subjects. Often the participants of these studies are university students, as Webber and Johnston (2000) highlight there had been a lack of understanding of how students experience information literacy in the past. There are strengths and weaknesses to this demographic being the subject of so much information literacy research but as potential subjects they are a group who exist as consistent users of information literacy skills meaning these studies are able to capture the lived experience of individuals' information needs and use.

This theme of information literacy in practice and within learning institutions is carried on in further work by Webber and Johnson. In Johnston and Webber (2004) they examine the role that a Library and Information Science faculty can have in embedded information literacy skills within the culture of a university. An information literate university, they say, can come about either through direct teaching of skills or through the development of a holistic curriculum in which information literacy becomes a core value in the institutions development. This sort of institutionalised

learning could be a productive counter measure to the problem encountered in Lloyd's (2012) people in practice research that found competencies were not as transferable as previously believed.

In studying the effects of information literacy based interventions on first-year undergraduate students at Staffordshire University Walton and Hepworth (2011) present findings regarding the changing cognitive states the interventions produced. The study found that such interventions highlighted the importance of an affective state in reducing the uncertainty felt by students when confronted with tasks which tested their information literacy skills. An affective state is defined here as that which describes the emotional state of an individual. This is one of several states which contribute to an individual's rounded self in this context the others being the individual's cognitive state, their comprehension and critical skills; their style state, their learning style, and their cognitive state, including motivation. In further detailing the same research project Walton and Hepworth (2013) present a quantitative analysis of the data. In this analysis there was shown a clear increase in likelihood that the participants who received social media learning as well as face-to-face contact engaging with, and benefiting from, the intervention. Although the limitations with regard to the generalisation of the findings are noted the findings do appear to be supportive of the trend regarding the teaching of information literacy skills as best delivered in as holistic manner as possible.

This holistic intervention led approach to information literacy appears to be supported by other studies such as Anderson and Bull (2014) in their research on the potential role of the university library in helping the transition of school leavers into higher education. The findings of this study were that the outreach had been successful in helping to foster an information literacy enhancing culture as well as the positive effect of the more direct interventions. Given previous findings regarding the development of information literacy cultures within higher education and direct interventions with students this research this study draws together threads previously expressed separately and frames them within the lived experience of those who have daily developing information literacy needs. Information literacy in these terms does not appear to be something which can be developed as a standalone skillset.

Although much of the literature regarding information literacy is concerned with either the skillset which an individual requires to be information literate, or the manner in which they can develop those skills there has been some work that seeks to link information literacy with other cognitive functions. Weiner (2011) discusses the commonalities between information literacy and critical thinking. Acquired via the ERIC and PubMed databases a total of 8745 journal articles on critical thinking and 8201 on information literacy for the period 2000-2009 were examined using text mining software. The key difference that Weiner identifies is one of where these processes take place. Critical thinking is perceived as a private act, the processes of learning and understanding taking place within the individual with little external oversight. Information literacy, however, is more public, the literature he reviewed focussing more on the application of these skills and results of that application. Following this the areas in which they are differentiated are in the degree of formalism, private versus public, and in the learning behaviour employed, information literacy having a greater sense of self-learning. Critical thinking is also described as being subject specific whereas information literacy has broader cross-disciplinary applications. However, there are competencies which are linked; recall, analysis, application, synthesis, judgement, comparison and evaluation are the foundational elements of both critical thinking and information literacy. In his summary Weiner suggests that information literacy could become, like statistics, with methods infused throughout research of all fields bringing a more formal approach to information retrieval built upon the subject specific knowledge needed for critical thinking.

A potential application of a synthesis like this can be found in Smith (2013). In discussing the political agency of young people Smith argues that critical literacy, drawing together skills from existing critical thinking and information literacy literature, could provide a skills platform for the democratic engagement young people through services such as libraries. Citing Morrell (2004) Smith argues that teaching literacy means going beyond a functional skillset instead looking at underlying structures such as power as she states education is political. While this is a somewhat neo-Marxist reading of what the application of critical literacy could be it is an example of the subject specific strength of critical thinking which Weiner (2011) combined with the broad applicability of the core skills of information literacy. Within the context of this research PhD with regard to the unknowledge economy, this sort

of proactive critical engagement coupled with information literacy skills is a concept which is revisited to provide additional insight during the discussion of findings in Chapter 5 of this thesis.

With the discussion of models of literacy as well as practice and application of these models, and other themes which can mesh with them, one must consider what information literacy may mean in the future. Rowlands et al. (2008), in their review of what the researcher of the future may look like, examined the existing literature and survey data in order to draw their conclusions. Of particular interest to their work were those individuals born after 1993, labelled the 'Google generation' in the paper's title. Rowlands et al found that despite a reliance on digital technology, such as search engines, the 'Google generation' lacked the analytic skills to properly process the information they recovered. In other words, they lacked key information literacy skills. This theme is somewhat countered by the findings of Pickard et al. (2014) which suggest a less discouraging picture, if qualified with some confirmation of the theme. Pickard et al point to the young people in their study evaluating online information in different, not necessarily inferior, ways such as seeking confirmation from additional sources. Although despite this the real world practice of young people still requires information literacy practitioners to be aware of the weaknesses in their skillsets.

As an aside, this 'Google generation' would fit within the bounds of what Prensky (2001) called the 'digital native', those who have grown up with, and are innately familiar, with digital technologies. It must also be noted at this point that there are issues around Prensky's definition and these are discussed in more detail in section 2.5.2 of this chapter.

A recent development within the literature on information literacy has been the publication of a new framework for information literacy in higher education from the Association of College and Research Libraries (ACRL, 2016). This framework takes the form of six key frames which address knowledge practices or dispositions toward information within higher education. These frames are:

- Authority is constructed and contextual

- Information creation as a process
- Information has value
- Research as inquiry
- Scholarship as conversation
- Searching as strategic exploration

While these frames tie closely to the themes of this research the publication of the framework were published too late for them to inform the working conceptual framework developed for this research. However, they are addressed in Chapter 5 in relation to the findings.

The concepts of information literacy discussed in this section cover the traditional and formal definitions as well as their application as this research focusses on information literacy online there are more specialised strands which required investigation. Digital and media literacy are concerned with the skills individuals need to navigate and interpret particular types of information. Adapted from the core of definitions of information literacy these new literacies seek to specialise and evolve how information literacy skills can be used in changing spheres of practice. As these two strands of the literature relate to similar needs, despite being distinct areas of interest, they are covered together in section 2.3 below.

2.3 Digital and Media Literacy

2.3.1 Media Literacy

Media literacy is a term used to describe several key aspects which are vital to an individual's ability to understand the world. It is described as "an informed and critical understanding of the nature, technologies and impact of the mass media as well as the ability to create media products" (Pungente, 1996)p.9) and "the ability to access, analyse, evaluate, and communicate messages in a wide variety of forms" Hobbs (1998)p.16) referencing Aufderheide (1993).

Key reasons for the need for media literacy today include:

- media messages are constructed;
- media messages are produced within economic, social, political, historical

and aesthetic contexts;

- the interpretative meaning-making processes involved in message reception consist of an interaction between the reader, the text and the culture;
- media have unique languages, characteristics which typify various forms, genres and symbol systems of communication;
- media representations play a role in people's understanding of social reality (Hobbs, 1998)

Media literacy now covers all fields and cannot be taught or learnt in isolation (Baker, 2004) as digital skills become increasingly necessary for those functioning in modern societies, adding to the body of media which presently exists. As such media literacy cannot just be about individuals learning how to relate to media products, "The goal of media literacy is helping people become sophisticated citizens rather than sophisticated consumers" (Lewis and Jhally, 1998)p.109). As such there is a drive in the literature that, while teaching media literacy is important through school, further and higher education, it is also something which should be continued into adulthood (Dennis, 2004, Vande Berg et al., 2004, Mihailidis, 2008, Domine, 2011).

The issue of 'digitisation' is one which has created a challenge for the media literacy field. It creates a parallel set of problems to those within traditional 'analogue' media literacy coupled with the complication of how to address new technologies and new forms of content delivery. This means that while media literacy may not be considered an outdated there have been critics of its ability to explain the issues around digitalisation and the move towards a more online-centred consumption of information.

"Most media literacy programs fail to take into account the dramatic nature of digitalization, focusing on analog-native media such as the newspaper or digital-native media such as computers and overlooking the process through which these forms are blending and converging...The aesthetics of digitalization include prepurposing and repurposing content, virtual experience, sampling, interactivity, and manipulation." (Olson and Pollard, 2004)p.248)

Media literacy may provide some of the skills necessary to read and understand online information, the online text of a newspaper article is more often than not identical to the physical print edition, but it lacks some nuance that goes beyond understanding the words and pictures used in a piece of information. There is a language in the aesthetics and presentation of a website as well as the content of an article for the individual to read and decode. In order to learn this language an individual must be media literate but must also develop another literacy to compliment it, digital literacy.

2.3.2 Digital Literacy

Digital literacy is an issue which may exist as an extension of media literacy into a new technology, providing a new language which it is necessary for individuals to adapt to, or as a new and separate form of literacy altogether (Chase and Laufenberg, 2011). Whether or not digital literacy is a new form of literacy there are certain characteristics which define it within the literature - "(a) photo-visual literacy; (b) reproduction literacy; (c) information literacy; (d) branching literacy; and (e) socio-emotional literacy" (Eshet-Alkalai, 2004)p.94).

These literacies as discussed by Eshet-Alkalai are defined as thus; Photo-visual literacy is learning-to-read from visuals. This is a cognitive skill that uses "vision to think" (2004)p.95). Reproduction literacy, the art of creative duplication. This involves the use of digital tools that have the capabilities to edit or combine/recombine new and pre-existing materials (text, audio, video, images) into new works of art or writing. Branching literacy describes the use of hypertext in the creation of non-linear medium of information and the ability to navigate through the displayed information freely. Branching-literate individuals have good spatial orientation and the ability to create mental models, concept maps and other forms of abstract representations in hypermedial environments (Eshet-Alkalai, 2004 citing Lee & Hsu, 2002). Information literacy, as discussed in Section 2.2, this literacy is associated with critical thinking and the ability to search, locate and assess information effectively. Socio-emotional literacy is associated with the emotional and social aspects of online socialising, collaborating and undertaking day-to-day chores e.g. banking and purchasing online. It requires the ability to be highly critical and analytical, to avoid online 'traps', for

example being able to identify pretentious people in the chat rooms and avoiding hoaxes and viruses. (Ng, 2012)

There is something of the user-creator binary visible in these aspects of digital literacy, skills which in the 'real world' application of digital literacy may not be essential for an individual to get by. Questions about what digital literacy means, if electronic is the same as digital for example (Chase and Laufenberg, 2011), are ones which must now be addressed. The question of what constitute digital literacy skills is an interesting one as it asks whether the researcher means the ability to read a piece of information which is presented on a screen, whether it is the technical ability to access that information by physically interacting with a device such as a computer, smartphone or tablet, or whether it is an even greater degree of technical knowledge such as understanding how to code. In attempting to manage these disparate factors Ng (2012) generated a three-part breakdown to define digital literacy as illustrated in Fig 2.1:

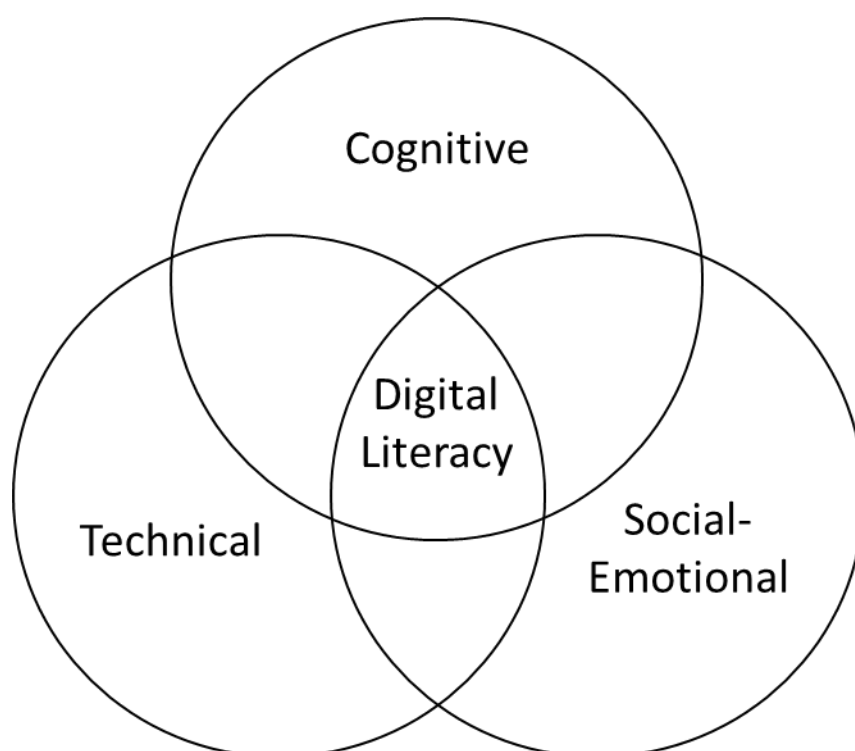


Fig 2.1 Digital Literacy Model adapted from Ng (2012)

This illustration of the key components of digital literacy highlights the aspects which we could use to differentiate digital literacy from traditional media literacy. The 'cognitive' and 'social-emotional' skills are both elements that are shared with

traditional media literacy, the ability to think critically and engage responsibly with the text; the 'technical' side is the one which appears to be the differentiating factor.

The degree of technical awareness required to qualify someone as digitally literate is described as "being able to connect and use input and peripheral devices for example earphones/headset, external speakers and smartboards. It assumes knowledge of working parts, the protection of files and the ability to troubleshoot by reading manuals or through 'Help' functions and other web-based resources" (Ng, 2012)p.1067). For an individual to be able to engage with digital resources does not necessarily require them to have these 'hard' skills as someone who could be traditionally considered media literate may have the cognitive skills to understand and evaluate some of the resources before them.

Tied closely to digital literacy is the concept of the 'digital native'. The digital native is someone who is characterised by their almost second-nature like ability to adapt and embrace digital technology, and who is often characterised as being of a generation who is young enough to have been brought up alongside the evolution of digital technologies (Blowers, 2010). However, there is some dispute as to whether or not age should be seen as a defining factor in digital literacy in this manner (Bowen, 2011). Section 2.5.2 addresses the shifting perception of the concept of the 'digital native' and the conceptual qualities of 'digital native-ness'.

Studies on the behaviour of digital natives show that they behave quite differently to 'digital immigrants' (those over 30 years old who have entered the digital world) with differences in their thought patterns (Herther, 2009), searching (Zimmerman, 2012), and their interactions with traditional sources of information (Tonta, 2009). One aspect of the digital native behaviour that the mainstream press is particularly interested in is their relationship to personal information (Baumann, 2010); this sharing of personal information could imply a degree of either trust or naivety which is not referenced among digital immigrants in the literature. As such could it be that digital natives either have a less well developed set of social-emotional skills or that the negotiation of digital space has a different set of norms and understandings to those that digital immigrants would recognise, and the natives have the more developed social-emotional skills?

2.3.3 Links Between Media and Digital Literacy

Searches suggest that there is not a lot of ground shared between the media and digital literacy strands of the literature, in that they appear not to reference each other a great deal despite dealing with similar themes and problems. Media literacy literature is primarily focused on more formal learning environments such as classrooms, higher education and libraries, whereas digital literacy literature is more concerned with the new possibilities and problems raised by online information and interaction.

Despite this disconnect, the threads which do draw through both sets of literature reveal a set of common concerns being identified, with cognition, ability, understanding, ability to read the media of the text (be it print, pictorial or digital) and critical thinking skills all necessary to take meaning from a text. This aspect – the ability to read meaning from a text – is a point of convergence not only between these two strands of literature but also that of information literacy.

In presenting a poll of 500 teachers Miller (2012) proposes a solution to the problems that the availability of information online can cause for pupils as they develop their information literacy. This proposal is articulated through the concept of 'digital fluency', this concept is constituted by three elements; critical thinking, net savviness and diversity. These grew from observations reported by the teachers that pupils use the internet as their primary source of information, that their digital literacy was poor, that this led to the quality of the pupils' work suffering and that teachers felt that the teaching of these skills required more importance. In addressing these concerns and developing the concept Miller combines existing strands of thought with this conceptualisation of critical thinking being related to media literacy and net savviness focussing on digital literacy skills. Diversity in this context relates to ensuring that there is a broad selection of sources reviewed rather than allowing pupils to trust to convenience when collecting evidence. The most relevant aspect of digital fluency for this research project is the manner in which it identifies that reading a text in an online context is about understanding where the information comes from and how a working of the mechanics of the internet affects the presentation of information on it.

Taken in conjunction with Rowlands et al. (2008), and their discussion of the Google generation and its place as the researcher of the future, this aspect appears a critical difference between digital literacy and media literacy. However, as Rowlands et al. (2008) conclude, the shift to online information seeking has not seen an improvement in basic information literacy skills in comparison with previous generations. This appears, in part, to be related to the problem in separating useful information from misleading or incorrect information, a conclusion seemingly replicated elsewhere in the literature. In Pickard et al. (2014) a study of British high school children found that in their online information seeking the authorship of the information they retrieved was less of a priority than its availability. With authorship being viewed as a factor in establishing the credibility of a piece of information, that young people do not see this as a key factor could be an indicator that they lack some critical awareness. Although in their final remarks it is noted that the picture found in the study was not as discouraging as other literature suggests and that the young people involved could engage with the weaknesses of sources.

Pettingill (2006), again studying high school aged young people, describes in her findings that the young people involved lacked the technical knowledge and information literacy skills to determine the credibility of online sources. She suggests that a different degree of nuance is required for these young people to identify credible internet sources compared to physical ones. This appears to be similar to the divide between digital and media literacy which one could read into Rowlands et al. (2008) and part of the more pessimistic characterisation that Pickard et al. (2014) go some way to counter.

The thread that Miller (2012) draws in explaining that understanding how online information comes about could be the solution to this issue rather than appearing as a dividing line between digital and media literacy. Flanagin and Metzger (2011) echo this as they found that when presenting information from Wikipedia it was deemed more trustworthy when presented in the format of Encyclopaedia Britannica than of Wikipedia. While there could be a case for this being a problem in reading the source, that it was the younger participants in the study who found Wikipedia entries least trustworthy suggests that Miller's notion of understanding what is behind the

scenes of a website helps individuals become more roundly information literate online. It could also be that because older participants in Flanagin and Metzger (2011) have digital literacy developed to the standard of Miller's digital fluency. If they are 'net savvy' enough to be cognisant of the fact-checking and moderation which takes place within Wikipedia, then they will be better positioned to trust Wikipedia and possess the combined media and digital literacy to read an online source as more than just what is presented on the screen before them.

Definitions of digital literacy draw on technical as well as cognitive skills, as well as attempted to address the squishiness of digital literacy (Chase and Laufenberg, 2011) and the manner in which that play and social use can be more important than formal learning (Meneses and Momino, 2010). Media literacy on the other hand focusses more on the cognitive tools required to read the signs and signals contained within a text. In the context of this PhD study in order to understand how individuals may come to read a text it was necessary to bring these strands of the literature together to help in the conceptualisation of the individual as a rounded reader of the information they find online. In describing social media literacies Rheingold (2010) lists five as being key for individuals within digital discourse - attention, participation, cooperation, network awareness, and critical consumption. These come to active social roles as well as passive reader roles within digital discourse but they too draw upon existing threads of digital and media literacy, how reading a text may not be more active than ever before and the awareness individuals must have when placing their trust in a piece of information online.

2.4 Trust

While this research is intended to critically engage with the potentially evolving relationship between the individual and information within digital discourse there are areas of research within information science upon which its initial understandings are built. One of the key foundations in this regard is the literature on trust in online sources - who, how and why individuals choose certain sources over others. The issue of trust in online sources is an important one as research suggests that the ability to establish the authenticity and credibility of an online source is not a straightforward process. The experiences of young adults and teenagers have been

documented in several studies, many of which have a similar theme within their results. One study of 433 US university students, published in 2008, found that participants had difficulty distinguishing genuine from fictitious pages (Wogalter and Mayhorn, 2008). Another asked teachers, librarians and information literacy professionals for their experiences dealing with young peoples' use of the Internet for seeking information and found that either through lack of ability or patience that young people were vulnerable to falling victim to falsehoods, misinformation and even scams (Miller and Bartlett, 2012). An earlier study had similar findings, that young people lacked the critical tools to determine credibility when it came to online sources (Pettingill, 2006).

As well as further highlighting the common theme that differentiating 'good' sources from 'bad' for young people (aged 15-25) seeking information online Pettingill (2006) also points to the role of a 'trustee' in helping guide their choices. The role of expertise in helping determine the authenticity of online resources has been the focus of other papers which found that it was indeed a strong factor in bestowing credibility on a source in the eyes of individuals seeking information (Liu, 2004, Flanagin and Metzger, 2011, Lucassen and Schraagen, 2011). The role of the so-called expert is one notion which this research aimed to question when taken in conjunction with the evolving role of the individual online, as will be discussed below. One thread within this area of the literature which could hold the key to understanding the relationship between individuals and information within digital discourse is the idea of social validation. These studies have branched out from the research on expertise and into examining similar roles such as 'trustees', trusted non-expert sources of validation, and how they affect the perceived credibility of information sources (Jessen and Jorgensen, 2012). This online social and information ecology is both a self-sustaining system and a clear break from traditional static web-based presences (Finin et al., 2008).

Another important thread in the investigation of how individuals judge the trustworthiness of a source has been the research into information seeking and search. As recently as 2012 researchers still found, when studying the online search behaviour of students, that the possibility remained open for the provision of guidelines as a solution to the problems the 48 participants faced in identifying and

solving credibility issues with the sources the participants found (Madden et al., 2012). As this research was interested in the nature of the relationship between individuals, information and digital discourse it is worth noting that the issues involving information seeking are not limited to problems of identifying suitable sources when searching for information. Another key problem in seeking information is the problem of confirmation bias and selective exposure, or as one study terms it 'cyber-Balkanization' (Kobasyashi, 2009). Other studies have found that whether on newer social media such as Twitter (Himmelboim et al., 2013, Kim, 2012), online political discussion groups (Brundidge, 2010), or in the news content which individuals choose to consume (Johnson et al., 2011), there has been a tendency for individuals within the digital discourse on political issues to cluster and interact with information and other individuals that confirm or support existing views and ideological positions. This kind of clustering has also been evidenced in the Internet geography project Floating Sheep, which is a collaborative project that seeks to map patterns of information and behaviour online through the modelling social interactions (Zook et al., 2012). If this pattern of clustering is a consistent trend across digital discourse then, as a trust issue, it could be one of the key factors in critically exploring individuals' cognitive reactions to information and its sources, as well as the manner in which the information is distributed and acted upon within the discourse.

Given that the complexity of information use environments is increasing Pickard et al. (2011) took the approach of examining what factors individuals utilised when deciding whether to trust a source or not. The 'i-Trust' model identifies three important influences on user decisions, external cues, internal cues and the user's cognitive state. External cues included whether a source had outside endorsements, recommendations and ratings systems. Internal cues related more directly to the content itself, accuracy, authoritativeness, motivation, citations, affiliations the source may have with others. Here the type of source was also a factor, was it a journal or a blog for example. The user's cognitive state was the third factor which could influence a user's perceptions of the trustworthiness of a source. This refers to issues such as the need for closure, a willingness to explore information, a willingness to take risks, as well as other influences such as time, comfort with the internet, even ease of use. This complexity is perhaps a reason why the 'trustees' of

Jessen and Jorgensen (2012) feel like such a compelling addition to concepts of trust and aggregated trustworthiness. They are an additional external cue but they are one that could seem much more immediate and personal to the individual than a rating system.

Wogalter and Mayhorn (2008) examine more of what Pickard et al. (2011) characterise as internal cues in their study of perceived credibility when trusting the internet. This examination of internal cues comprised two studies, the first focussing upon domain suffixes and seals of approval, the second on domain names. Together these studies provide an examination of the qualities of a web address as an internal cue for trustworthiness and perceived credibility. The findings indicate, firstly, that suffixes do improve perceived credibility of a website. Wogalter and Mayhorn (2008) report that suffixes such as .edu and .gov rated higher with participants than .net or .com websites. This was in keeping with previous studies which they cite and, given that .edu and .gov refer to academic and government websites, it seems logical that a study of suffixes would find them to carry a high degree of perceived credibility. It is interesting to note that .edu was not originally restricted only to higher education establishments and that prior to 2001 it was possible for unaccredited institutions to use the domain now reserved for US higher education institutions. The first study also tested seven genuine and three fictitious seals of approval and found that the fictitious seals were as likely as the genuine ones to be perceived as credible by the participants. More experienced internet users were better at distinguishing the genuine from the fictitious seals but the authors note that one fictitious seal was rated higher than all the genuine ones by even the experienced users. The experienced users rated this fictitious seal more highly than the inexperienced users. The second study tested the degree of influence on trust that domain names had on the participants. Shown real and fictitious domain names the participants were found to rate trust in websites with authentic and authoritative sounding names whether or not they were real or fictitious. The more important influence seems to have been familiarity, although again some fictitious but authoritative and familiar sounding websites were rated highly as trustworthy by the participants.

Lucassen and Schraagen (2011) took an information literacy focussed approach to the role expertise plays in determining trust. The participants in their study were

presented with Wikipedia entries of varying degrees of accuracy and found that experts trusted the Wikipedia entries more than novices. They posit that this could be due to novices not trusting themselves to authenticate information as they lack the knowledge or skills to authenticate information against. Some novices did indicate scepticism of the information simply because it was presented as coming from Wikipedia. This plays somewhat into the findings of Wogalter and Mayhorn (2008), that familiarity with a website's name can alter perceptions of trust, although in this case it meant that authentic information was treated with caution.

When thinking of this issue of trusting sources based on reputation rather than accuracy the factors which influence the spread or continued belief in misinformation come into play. Ecker et al. (2014) discuss the manner in which pre-existing prejudices influence the trust and credibility individuals place in news coverage. In this instance the two experiments upon which the article is based were related to racial prejudice and the level of acceptance from participants that the information had been incorrect. The willingness to accept these retractions appears somewhat dependent on what an individual's prior beliefs were, however there was some discrepancy which saw retraction acceptance playing on the degree to which it countered previously held beliefs. In the example provided an individual with a prejudice against Aboriginal people could accept a retraction that a single instance of crime was not committed by an Aboriginal person as a single occurrence was not enough to challenge the underlying prejudices of the individual. While it ran counter to the existing literature which they had reviewed the explanation put forward was that individuals will accept information which runs counter to their pre-existing beliefs but only when those beliefs would not be changed by the act of accepting the new information.

Given this research sought to investigate the notion that information could become effectively subjective, its interpretation, meaning and reception detached from its original intent and factual basis, the role of conspiracy ideation in online discourse and its effect on trust is an interesting one. Lewandowsky et al. (2013b) examined the predictive effect that certain worldviews and conspiracy ideas had on an individual or group rejecting science. They found that while right-wing free-market worldviews could be tied to some rejection of the implications of scientific publishing,

such as regulation, the degree to which this worldview effected overall rejection of science was small. Those they looked at as holding conspiracy theory ideas could be predicted within the study to be strong rejecters of the scientific propositions in the study. Where Ecker et al. (2014) describes evidence resistance as coming from a position where the individual will not accept evidence beyond a threshold which threatens their beliefs, this discussion of conspiracy ideation suggests evidence can inspire a level of rejection beyond resistance. Individuals exhibiting conspiracy ideation are seen as even seeing evidence contrary to their beliefs as further evidence of the conspiracy in which they believe. This level of rejection is an extreme group within wider discourse but nonetheless one which could be an influence upon conceptualisations of the perceptions of information online. The cognitive processes from which these attitudes could stem are examined in Lewandowsky, et al (2012), a study which is focussed upon misinformation and how it is spread in modern society. Identifying four key groups as originators of misinformation, rumours, governments and politicians, vested interests such as businesses and non-governmental organisations, and the media, they go on to highlight that the internet has become a powerful vehicle for spreading and perpetuating misinformation. As the spectrum of this reaches from rumours that are permitted to persist through to websites whose *raison d'être* is to spread misinformation, linking the work of Lewandowsky to studies like that of Wogalter and Mayhorn (2008) draws important strands in the literature together. This drawing together combines thoughts on how individuals can come to trust online information with why they may not, and how untrustworthy information can thrive online.

This influence on trust in information of pre-existing beliefs is a challenging notion within the literature as it introduces an unpredictable variable into any assumptions regarding the perceived credibility an audience may place in a source. In this sense when plotting the development of the research in this thesis assumptions could not be made on the part of the researcher regarding the credibility of websites and the trust which subjects appear to place in them. This is why perceived credibility is such an important concept, it articulates the trust relationship individuals come to have with information they find online as the factors discussed in this section mean any definitive empirical notion of credibility is not possible. The idea of perceived credibility, as distinct from authoritativeness or established credibility, is an issue

which is expanded upon in section 2.7 during the development of the working conceptual framework.

2.5 Role of the individual

The role of the individual in online communication is that of both sender and receiver of messages, but the manner in which this happens and the dynamics which they create was of importance to almost every aspect of this research. While this research focussed upon the discourse within a web forum, earlier research focussing on the reach of individuals into online communication has its roots in the study of the evolution of blogging. Of particular relevance to this research is the concept which Kim (2012) introduces of 'bottom-up credibility'. While Kim's study found that individuals found blogs to be only a moderately credible source of information it is the concept that credibility can be built from the 'grassroots' up, rather than coming pre-approved from established 'old media' sources such as television and newspapers, which is most interesting.

This concept is rooted in Kim's reading of the large body of work which exists with regard to blog credibility and the relationship individuals have with blogs and tradition media. Thomas Johnson and Barbara Kaye, in particular, have collaborated on the subject extensively over a number of years (Johnson and Kaye, 2002, Johnson and Kaye, 2004, Johnson et al., 2007, Johnson and Kaye, 2009, Johnson and Kaye, 2010, Kaye and Johnson, 2011). Over the course of their work it is possible to see the importance of blogs to politically active users increasing as time moves on.

While the increasing importance of blogs can be seen in the manner in which they have been covered in the literature, there is also writing on how and why individuals find particular blogs more or less credible than others. Key issues such as individuals' abilities and instincts with regard to source identification (Vraga et al., 2011), comparisons of how ideologically motivated individuals utilise web-space (Byrne et al., 2013), the role of user comments on news sites and blogs in determining readership and credibility (Lee, 2012) and the role blog writing has in shaping an individual's identity (Schwämmlein and Wodzicki, 2012, Siles, 2012),

have all received some coverage within the literature and are all issues which had implications during the development of this research.

Also important with regard to the developing role of the individual were the implications of evolving technologies on the ability of individuals to communicate with each other online as well as possible consequences which that may bring (Brandtzæg, 2012, Himmelboim et al., 2013). This has been a step into more complex relationships than simply the author/reader dynamic which publishing a blog created when it allowed individuals to take on greater contributions to online discourse. In order to describe these new more complex relationships terminology has had to be produced which can conceptualise the degree to which individuals are engaged in these new relationships and the roles which they may take within the discourse. Brandtzaeg's (2012) individual user types - Sporadics, Lurkers, Socializers, Debaters, and Advanced – appear a particularly useful distinction for researchers to bear in mind while examining online behaviour in social networks. In his analysis Brandtzaeg (2012) notes key differences in the these individual user types are characterised as exhibiting different levels of engagement in terms of quality and quantity. Sporadics were the least engaged group, their involvement being close to that of being a non-user checking into the wider community only occasionally to see if something has happened which directly affects them. Lurkers have the next lowest level of engagement, their role is regular passive observation but little active engagement. Socialisers are characterised as having engagement and interaction with individuals as being their primary reason for connecting to a social media platform although they don't engage heavily with debates or follow deeper discussions. Debaters are the second most active group, their engagement defined by high levels of activity in debates, uploading content and writing contributions. Advanced users are the most heavily engaged group. They are the most frequent users and take part in the widest range of activities, socialising, debating, adding new contributions. This label of them being 'advanced' describes both the sophistication of their behaviour and their competence within a social network.

The evolution of these characteristic user types is just one of the ways in which the role of individuals has changed as online discourse has become more complex. The following sub-sections provide an overview of some of the key issues from the

literature which were relevant to this research. First the role of the individual as an information seeker. Second the issue of whether individuals can be considered 'native' to digital life. Thirdly there is a discussion of commonly identified types of user behaviour in online social interactions. The fourth section then confronts the issue of credibility in online interactions as more voices are heard and contributions made.

2.5.1 Information seeking

The role of the individual in the context of this research is not simply characterised by their interactions within the discourse but by their relationship to the information which they are discussing. While the aspects which contribute to how an individual comes to read and understand a text are discussed in sections 2.2 and 2.3 there is also a question of how individuals find those texts which needs to be addressed. Each of the three high level models of information literacy discussed in Section 2.2 features information seeking as one of their elements yet do not elaborate much further on this element as a cognitive function of the individual.

Bates (2002) adapting her own work (Bates, 1986) identifies and details five modes of information seeking; awareness, monitoring, browsing, curiosity, and direct searching. These are characterised by Bates (2002) as follows; awareness is the passive undirected behaviour of being aware as one attends to everyday tasks, monitoring is directed yet passive such as keeping up with ones interests, browsing is considered undirected yet active looking for information which is interesting but for which one does not have a need. Curiosity is related to monitoring and browsing in that it recognises a need for information but it is not directed or focussed at its point of origin. Direct searching is both active and directed, information is sought to satisfy a particular need of the individual. It is this characterisation of direct searching which is most closely aligned with the models of information literacy discussed in Section 2.2. Bates (2002) comments that although complex systems for information retrieval, such as library classifications, exist that in aiming to simplify their information seeking processes many individuals do not use them. It could be that with the growth of the internet in individuals' information seeking that many now simply trust the system to deliver the correct results for them resulting in a diluting of direct searching as a time and skill intensive process.

In his study of young people and their information seeking Shenton (2004) investigated literature focussed on school age participants. He found that the existing research was focussed upon specific environments such as the classroom and the library, as well as some cross-locational studies which covered multiple learning environments. He also found that there was a broad range of research forms used; longitudinal studies, single instances studies, and series of repeated investigations. The range of literature which Shenton (2004) reviews makes it clear that the emphasis of much research has been on what Bates (2002) characterised as direct searching. As these studies were drawn predominantly from the 1990s and early 2000s then the subjects of the research will have grown up to become 'digital natives' (Prensky, 2001) members of the 'Google generation' as described by Rowlands et al. (2008). As problematised in this PhD as well as elsewhere in the existing literature increasing access to information online has made information seeking more complex than in an analogue era.

Touching upon the influence of social media upon the Google generation Rowlands et al. (2008) hint that behaviour similar to Bates (2002) monitoring and browsing. Discussing how younger individuals are not engaging with libraries as sources of information there is a more casual, passive practice implied. While the information, media and digital literacy skills of the 'Google generation' are discussed in Sections 2.2 and 2.3, it could be that this more casual, everyday engagement with an information source such as the internet has changed information seeking so that the direct searching which was the focus of so much previous research is not representative of how many individuals come to information today.

Bawden (2006) takes a long-term review of the evolution of information needs and how information behaviour has changed. Discussing Wilson (1981), Bawden outlines these changes over the intervening twenty-five year period, one feature which arises during the discussion of 'user studies' is an increasing recognition that information flows are rarely one way. This recognition is accompanied by a reference to the importance of the study of information seeking in everyday life, this again would appear to hint at the importance of passive and undirected forms of information seeking as well as the more highly studied active and directed searches which make

up the bulk of information seeking literature. This growth of the 'everyday' appears to be in parallel with changes in the understanding of information needs. In reviewing (Wilson, 1999) Bawden takes this evolution of needs as far as to say that it has become redundant to speak of information needs at all, its place should be taking by information seeking to satisfy other needs rather than information being a need itself. In this sense one could say that information seeking has become a default state of mind for an individual engaged in modern western society, that the role of a responsible information literate individual is to be always engaged with information.

If information is no longer a need unto itself but that information seeking is considered a means to another end, then where does information seeking fit into information behaviour and the role of the individual? Robson and Robinson (2013) have developed a model of information behaviour which combines information seeking and communication. This model is a holistic system in which all of the constituent parts, either information seekers, receivers or sources are able to impact upon one another and the process is looped to feedback within itself. It also draws upon the utility and credibility of the information; it is noted that these are not objective absolute measures, and as discussed in sections 2.7.1 and 2.7.2 perception is a key factor here. The Robson and Robinson (2013) model allows for environmental context, such as workplace or online forum, to influence the process it illustrates as well as internal human factors such as expertise, education and psychological influences. If information seeking can become a process of communication rather than direct searching being the defining characteristic of information behaviour online, then perhaps the free exchange of information between individuals means that information seeking within the context of digital discourse is a passive process. In this case the individuals themselves gain a high degree of standing in the legitimisation of information and the role of the individual in information seeking is no longer than of one with a need they seek to satisfy but as part of a node in a wider system. The issue of an individuals' place as an authenticator of information and their relative credibility is discussed in greater detail in Section 2.7.2.1.

The individuals who would have been children in the studies reviewed by Shenton (2004) who grew up being understood as trying to satisfy a need would have

become young adults in a time when their lives would be saturated by digital content and online experiences. As well as the role of the individual in relation to information seeking evolving, so too has the role of the individual in relation to the experience of using the internet.

2.5.2 Digital native-ness

One area of the literature which required careful consideration when conceptualisations of online life were being examined is that of the 'digital native'. Prensky (2001) posited that there was a divide emerging in the mixed levels of ability of those who embrace digital technology. Digital natives in this sense were those who have grown and reach maturity alongside digital technology, it is natural to them and not a skill set which they have had to consciously learn. Digital immigrants, as Prensky labels them, are those older members of society who did not grow up with digital technology and have had to learn these skills in adulthood. Günther (2007) discusses the generational gap between these two groups and identifies differences in approach to digital technology which they exhibit. Natives are more likely to favour trial and error when facing new digital technology, immigrants more likely to consult user manuals. This idea of natural, fluid behaviour on the part of the digital native would appear an appealing one although Günther (2007) does recognise that there are mixed abilities in both groups. That younger people are considered more confident and capable with digital technology has been well established in the literature with research even being done to ask whether there are neurological differences to explain why digital natives are so much more at home with technology (Herther, 2009).

In studies such as Tonta (2009) and Zimmerman (2012) questions are asked about the future of information seeking, searching and public libraries if this new generation are moving to live their lives online. Zimmerman (2012) suggests that while digital natives are at home with the technology and, in keeping with literature that younger generations tend to use the internet as the primary source for much of the information they use, they do have weaknesses in their information literacy skills. These weaknesses, which were also discussed in Section 2.3, Zimmerman (2012) argues, are a reason for the continued necessity of library professionals to guide and educate digital natives in effective searching and sorting of information. Tonta (2009)

writes of how libraries will need to evolve and adapt to the needs of the digital natives and their online focus.

If the concept of digital native is generational as discussed above and has resulted in changing patterns of internet use, as discussed by Baumann (2010), then how does the idea of the knowledge economy relate to the rise of the digital native?

Given that the original conceptualisation of the digital native from Prensky (2001) is now over a decade old the question of whether this idea is still relevant and accurate has begun to be asked. Prensky's digital native predates 'web 2.0' and the emergence of the social network age. Facebook was launched in 2004, Twitter, 2006, Tumblr, 2007, Reddit, 2005, and MySpace, 2003. The shift towards social media has created a far more active role for individuals online and research such as Vodanovich et al. (2015) points to digital natives being only ever more immersed in online life. In their study Vodanovich et al. (2015) looked at the impact of social networks on digital natives and found that increased digital literacy and connectedness had come at the cost of increased bullying, isolation and a loss of privacy.

The predication towards online socialisation highlights an issue which perhaps always existed within definitions of the digital native but has become more apparent as more individuals move online. The digital native is not a single community or entity; it is made of individuals from a wide range of backgrounds from across the world. Analysing three groups of 18-29 year olds in Chile, Correa (2015) found that the skill levels varied widely between the groups and that it was the participants with lower levels of education who were the most frequent Facebook users. When typical assumptions of the digital native imply an individual with the means and education to have access to computing technology to the degree that it makes them 'native' users, this finding appears to contradict that. However, she does note that there is a divide in the types of use between the more highly educated and the lower attaining group which is more in keeping with what existing literature would predict. This division between the frequency of use and the type of use among different demographics within what has been characterised as a wider digital native group raises questions about the legitimacy of the demographic definition of digital natives.

In 2001 widespread internet access had not reached the point of ubiquity it has today and it would have been clearer to identify one group as being native to the technology. In 2015 the ONS (2015) released figures showing that 78% of UK adults have access to the internet compared to just 35% when records began in 2006. Given that the digital natives of Prensky's original concept, those under 30 years of age, could be as old as their mid-40s now perhaps it is no longer appropriate to still talk of digital natives as a distinct group.

Selwyn (2009) raises the issue of the myths and reality of the digital native concept and proposes instead that research is concentrated on the realities of young people's technology use. In describing the realities of how being of the digital native generation can be both empowered, such as the enlightenment and access which the skills can provide, and disempowered, privacy and security fears, Selwyn touches upon similar ground to other authors who question the progress narrative within digital native literature. He also calls for more complexity and nuance in understanding what constitutes the lived life of a digital native.

Another thread in the literature which questions the assumptions about digital natives is that in approaching this new generation as one defined by its skills rather than its culture researchers are not properly characterising the reality of their real world experience. Combes (2009), using the term Generation Y rather than digital native, discusses how in being defined by their familiarity with technology in the literature, this group is having their digital talents overemphasised. Combes argues that the assumption that familiarity with technology is reflected in effective use of the technology is flawed and that Generation Y actually lack the information, digital and media literacy abilities to cope with the information they find online. Confidence in using the resources has been confused with competence in reviewing sources and, as such, Generation Y is not as at home online as first appears. This idea that so-called digital natives suffer from deficiencies in their digital literacy is echoed by Ng (2012), who in his definition of modern digital literacies asks what can be done to teach these skills to digital natives.

If digital natives are not competent, efficient critical consumers of information online then can they really be accurately described as 'native' to the online environment?

Combes (2009) asks whether they might actually be digital refugees, misunderstood and caught between technology and knowledge; but perhaps the solution is in Prensky's own revisiting of his original concept. In the article 'H. Sapiens Digital: From Digital Immigrants and Digital Natives to Digital Wisdom' (Prensky, 2009), he argues that while the terminology of digital natives and immigrants was useful that the evolution of our relationship with digital technology has made the distinction between the two much less relevant. In place of defining what divides them Prensky introduces a third concept - digital wisdom. Digital wisdom is a concept that seeks to encompass the wisdom that can come from the effective use of digital technology and the wisdom in knowing how best to utilise the technology. Achieving digital wisdom would allow for several advancements according to Prensky - enhancing our access to information, enhancing our ability to perform deeper analysis, enhancing our ability to plan and prioritise, enhancing our insight into others, and enhancing our access to alternative perspectives.

The original generational demographic conceptualisation of the digital native was problematic due to weaknesses in addressing changes in technology and the socio-economic and educational barriers to entry faced by many. This new concept does not address these issues either, opting instead to recognise that the increasing universality of digital technology has rendered some of these concerns redundant. Instead, Prensky has put forward a very positive outlook on the role of technology in the lives of all individuals who have access without addressing those who do not.

If as individuals the distinctions between natives, immigrants and refugees in digital life are blurring or being erased as society progresses towards digital wisdom, what then for the messy complicated inbetween time? By examining the progression in the literature surrounding the concept of the digital native it would appear that, for all the issues which time has brought to the concept, much of its language is still very useful when discussing online life. The distinction of who is and who is not a digital native may have broken down but there now appears to exist a spectrum of digital native-ness which can encompass the way the digitally active individual of today relates to technology.

2.5.3 Types of common online behaviour

If it is no longer appropriate to consider distinct groups of individuals who are native or immigrant to digital life and that there is a spectrum along which who engage with the internet belong, then how does this spectrum look? There is scope for consideration for two spectrums given that digital native related to comfort online, one which would measure technical competence and another which would look at softer skills incorporating how individuals use the internet. An assumption can be made that the degrees of technical competence is a fairly straightforward judgement of technical abilities from those who are able to type and access the internet to those who can code, programme and understand the underlying mechanics of the internet. Due to the focus of this study this spectrum of ability is not of particular interest so will not be investigated further.

The second spectrum of what constitutes the lives of individuals online is much more fluid and by necessity much less defined. This is the one which deals in behaviour rather than comfort with the technological aspects of life online. In encompassing types of use there are factors to consider from how they use the internet, socialising, searching for information, and how they act when they are online. While there are various terms used for the most common types of online behaviour the definitions are fairly standardised even there is not a fully settled glossary of accepted terms for those definitions. With that being the case (Brandtzæg, 2012) provides a comprehensive base set of definitions and terminology which manages to incorporate all of the key behaviour group types. Identifying five distinct groups they are described as thus:

1. Advanced Users – frequent and diverse use across social networks
2. Debaters – highly active in discussions and contributors to social networks
3. Socializers – uses social networks for friends and family, unlikely to follow debates
4. Lurkers – use social networks to pass time and observe content rather than contribute
5. Sporadics – considered borderline nonusers, only occasionally engage with social networks

A sixth common type of behaviour which does not feature in this categorisation is that of 'troll'. Trolling being a trouble making behaviour which can stretch from the mischievous which can be managed by sites and communities (Binns, 2012) to more abusive and dangerous behaviour (Bergstrom, 2011, Hardaker, 2010). These trolls are likely missing from more conventional definitions of online behaviour because they are seen as disruptive anomalies within the online communities first explored by Rheingold (1993). While more complex relationships evolved and developed over time as access to technology enabled more individuals to become active digital citizens (Rheingold, 2003) and eventually enabling almost anybody to thrive online (Rheingold, 2012) the communities themselves were seen as relatively cohesive units. The arrival of disruptive presences is a challenge to this orthodoxy, however, while the character of the behaviour may have coarsened in some corners of the internet the actual levels of interactions in the manner Brandtzæg (2012) defines have remained fairly constant. This is perhaps a consequence of the technological limitations of accessing these communities, for the most part digital discourse is an asynchronous text based interaction. There have been exceptions with video sharing networks such as YouTube reaching hundreds of millions of viewers on a daily basis (YouTube, 2016), although the community interaction there is one of an audience who may respond via text rather than an all audio-visual platform. Massively multiplayer online role-playing games (MMORPGs), such as World of Warcraft, and online virtual worlds, such as Second Life, offer alternative expressions of self for individuals but while they command large audiences who 'live' online within them they are still highly niche forms of online interaction. There are estimated to be just under a million active Second Life users (Weinberger, 2015), although it had peaked at over a million previously. World of Warcraft reportedly had 5.5 million subscribers during 2015 when the company behind it, Blizzard, chosen to stop reporting the number of active users (Purchase, 2015). This was down from a high of 12 million active subscribers in 2010.

As these alternative forms of online social interaction have risen and fallen it is still text based platforms which dominate the online lives of individuals. The patterns of usage which Brandtzæg (2012) defined also allow scope for individuals to hold complex multifaceted digital identities as the walled garden effect and differing levels

of privacy meaning it is possible for an individual to adjust their performed self to the platform of their choice (Kärger and Siberski, 2010) able to hold any and all of Brandtzæg's categories at once. By the nature of the issues within digital discourse that this study was focussed upon it was extremely likely that Advanced Users and Debaters would be the most closely examined but the presence of Lurkers and Sporadics adds a complexity to the discourse. How does one evaluate the impact of a large number of near silent individuals upon a discussion? One possibility could be that of validation, as discussed by Hughes et al. (2014), the less interactive users could still manipulate the mood of the platform in ways which assists the tone of the interactions had by all.

Kramer et al. (2014) discuss emotional contagion within social networks, something that requires a large number of individuals to occur, and a phenomenon which compasses all five of Brantdzæg's groupings. This type of contagion could be triggered by the initial high volume and intensity sharing by Advanced Users but the tide of Socializers and Lurkers is likely what truly carries the contagion. As these behaviour types appear interdependent, despite their disparity in contributions, the ecosystem of interactions upon social media is drawn to the fore as the location where these behaviours are best executed.

2.6 Role of social media

One of the aims of this research is to examine information, the individual and the interactions between the two through digital discourse. As social media has become one of the primary spaces in which this takes place it is important to engage with the literature which currently maps the roles and uses of social media. Due to the rapidly evolving nature of the technology involved the literature on social networks is one which faces the danger of becoming outdated comparatively quickly. However, there is a large body of work on the subject and the lessons in texts on how to extract important or interesting data from social networks has helped chronicle the development of social media in recent years. Nohuddin et al. (2012) use research techniques such as frequent pattern mining and self-organising maps to identify the underlying patterns behind social media trends. 'Trending' upon social media is the phenomenon by which information regarding a single subject is shared and

discussed enough to build a critical mass whereby the issue being discussed reaches zeitgeist levels, if only for a few hours or days. In the ever quickening news cycle which this hot-housing of information and interaction can create, trending is vital for any story to gain traction within the discourse. In further examining information behaviour across social media Schultz-Jones (2009) reviewed 373 articles from across a range of academic disciplines. In doing so he found that there had been a rise in the interest from across the disciplines in social network related theory and research, and that the areas of interest were focussed around the diffusion of information, the influence social media can have and in how social media played a role in information seeking. These issues are consistent with the concerns of this PhD study, in particular the role of influence. Schultz-Jones highlights that collaboration plays an important role in influence within multi-disciplinary research.

Using mock Twitter pages Westerman et al. (2014) sought to investigate the role that social media can play in establishing the credibility of information sources.

Participants were asked to judge the credibility of these mock Twitter accounts and rate their credibility. Interestingly they found that the recency of tweets on the accounts affected the perceived credibility of them as sources; this links with one of the findings of Pickard et al (2014), that young people valued online information that was perceived as current. While not as large as Facebook which claims to have in excess of one billion user accounts Twitter, with an estimated 310 million active monthly users, is more open with most accounts open to the public rather than accessed privately and it has significant reach as an information sharing platform. Williams et al. (2013) performed a cross disciplinary literature review to investigate how this public platform had been covered in the existing research. The result was that most research is focussed on the content of the messages, with the second most popular topic for research being the users themselves. While there was a third group which sought to research both message and user, it appears as if they have been generally studied separately. This could create a disconnect in the research; as discussed in section 2.7.2.1 below the perceived credibility of a user is of high importance to the perceived credibility of a piece of information online. As Zhou (2011) demonstrates social cohesion, participation and identity play an increasing role in how individuals interact online. Group norms are established and are of high importance. When considering how individuals may seek or engage with information

online this could lead to confirmation bias or individuals becoming trapped in 'bubbles' which limit their understanding or perception of information from outside these group norms.

One area of social media research which could provide additional insight is the study of the 'ecology' of social media. Finin et al. (2008) for example made an early investigation into the meta-data of social network sites, ie trackbacks, tags, RDF data and links between networks. This type of research helps to provide a more mechanical backbone to work such as Nohuddin et al (2012) and can help illustrate the reach and potential influence of individuals as well as being a source of extrapolation for patterning the spread of trending information.

Studies of other social groups and their interactions within online social networks also provide valuable insights into how individuals communicate with one another. Studies of individuals who use multiple social networks (Notess, 2012), their complex relationships online (Yang and Sageman, 2009), specific niche interests (Joe and Chiu, 2009, Golbeck, 2011), and the use of online communication for specific utilities (Walther et al., 2012) all provide examples and lessons which can be applied when researching such a dynamic area as online social networks. These studies all help to illustrate the complex interactions and roles assumed by individuals in an online space and discourse. Other studies offer broader surveys of the social media landscape (Golbeck, 2007, Huberman et al., 2009, Qin et al., 2011) which while perhaps lacking lessons into researching a particular subset within a social network nonetheless provide a solid grounding in helping to understand the motivations and adoption patterns of individuals within the wider social media context.

2.7 Working Conceptual Framework

The focus of this research was upon the relationship between information and individuals within the domain of online discourse. In order to better understand what defines these two conceptual elements within this research context, working conceptual framework developed from the existing literature are outlined below.

These conceptualisations were designed to guide the analysis of the information and the individual. They formed a working framework based upon factors which, according to the literature, influence or define the relationship between information and the individual and were intended to guide the analysis and to be further developed following the completion of the analysis in this research project.

While the literature discussed in Sections 2.2-2.6 relate to the existing research which is relevant to this PhD study much of the research discussed does not seek to define what information is or how an individual is characterised. In this section, as part of the development of the working conceptual framework, literature which best defines what was only implied in the previous sections is used as the foundation of the framework with additional complimentary literature discussed in order to provide as full a definition to these key concepts as possible.

2.7.1 Concept of Information

McCreadie and Rice (1999), as part of a wider review into access to information, provide a review of the existing literature with regard to conceptualisations of information. This review identified four conceptualisations - information as a resource or commodity, information as data in the environment, information as a representation of knowledge, and information as part of the process of communication.

While these concepts are drawn from parallel and sometimes contradictory literatures they identify key descriptions and assumptions with regard to the nature of information. As Figure 2.2 illustrates McCreadie and Rice (1999a) were able to draw complimentary strands from the literature.

Conceptualisation	Description	Assumption
Resource or Commodity	A message, commodity, something that can be produced, replicated, distributed, sold, traded, manipulated, passed along, controlled	Assumes sense – receiver, assumes receiver makes of message what sender intends
Data in environment	Objects, artefacts, sounds, smells, events, visual and tactile phenomena, activities, phenomena of nature	Accounts for unintentional communication
Representation of knowledge	Documents, books, periodicals, some visual and auditory representations, abstractions of information	Assumes printed document is primary representation of knowledge, assumes primacy of scientific/technical knowledge
Part of process of communication	Part of human behaviour in process of moving through time/space to make sense of world	Assumes meanings are in people not in words, assumes human behaviour is basis of understanding the process

Fig 2.2 Conceptualisations of Information adapted from (McCreadie and Rice, 1999)

In order to form a conceptual framework to guide with the approach to the data in this research project, however, it is useful to visualise these conceptualisations in a more adaptable form. This is because the definition of information identified by McCreadie and Rice focuses on four distinct conceptualisations of what may constitute information and in order to best gain a wide qualitative understanding of how individuals approach information it is necessary to illustrate their relationship to one another.

Below is the first step in mapping these concepts as part of a single working framework of information (Figure 2.3). As an additional branch which expands upon McCreadie and Rice illustrates the conceptualisation they have identified as ‘data in the environment’ by drawing the concept of ‘information use environments’. This additional concept is taken from Taylor (1996) who is identified by McCreadie and Rice as defining information use environments as intersections of sets of people, classes of problems, work settings, and what constitutes problem resolution. While Taylor (1996) is writing of working environments this concept of an information use environment is also applicable to the online social interaction spaces in which digital discourse occurs. This is due to the information rich nature of online discussions, much as information was once seen as a workplace currency now that has passed into social interaction as well.

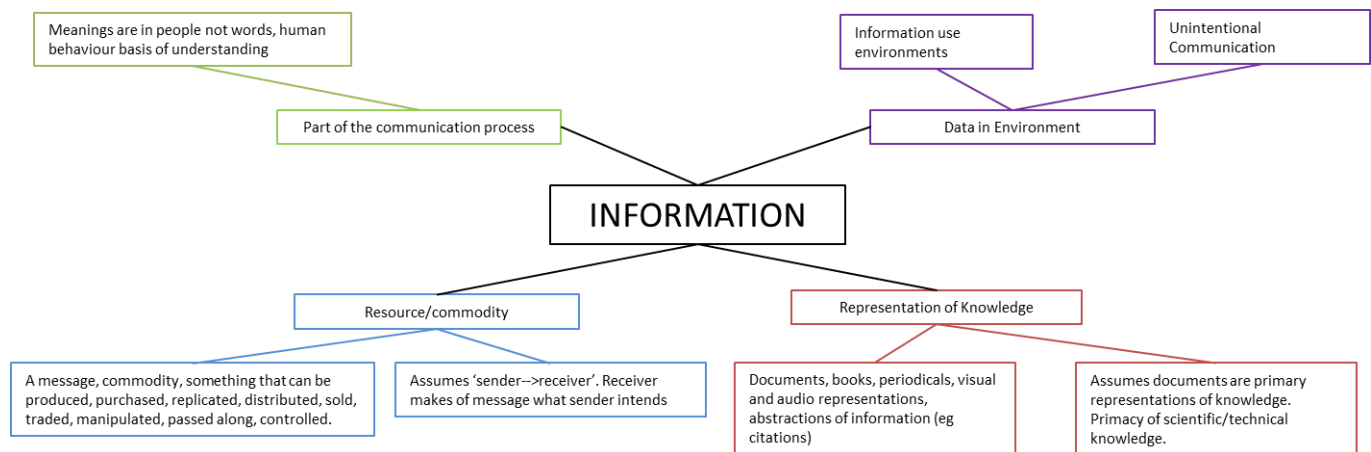


Fig 2.3 Initial Framework for Information adapted from McCreddie and Rice (1999) and Taylor (1996)

In this form it could be read that the branches come to represent fundamental elements which come to form a piece of information – its form (representation of knowledge), content (resource/commodity) and the meaning which is received by its reader (its part in the communication process), with the additional branch representing external factors which may act upon both the information and its receiver (data in the environment). In Figure 2.4 each of the underlying concepts behind each fundamental elements is illustrated in order to better picture how each corresponds to the more detailed definition in the working conceptual framework.

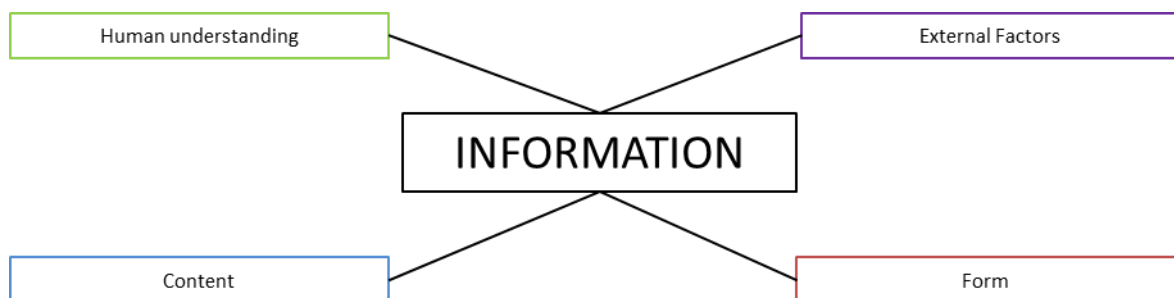


Fig 2.4 Underlying concepts for information

These elements are all primarily focussed on what constitutes information, however as this research project is interested on the role of the individual and their actions with regard to information then an extension of this framework may be necessary.

2.7.1.1 Context

Madden (2000) builds upon the conceptualisations of information discussed in section 2.7.1 to propose a model of context to aid understanding of how information is encountered by the individual. Madden's model features three contexts through which information is understood: the readership context, the authorial context and the message. These three elements have been visualised in Figure 2.5 in order to be adapted as part of the working conceptual framework.

The readership context refers to the context in which information is received and interpreted by its audience. The 'authorial' context is that from which the information originates, the meaning it is intended to communicate. The 'message' in Madden's model is the context which addresses the form the information takes, for example, the communication of scientific findings in the form of a journal article. The 'readership' context would be how the audiences' own knowledge, experience and environment affect the meaning they take from the text. Therefore, the 'authorial' context would be the findings the scientist wishes their audience to take as expressed through the conclusions of the text; the 'message' context would be the paper itself and what the consequences are of using that particular form of communication; and the 'readership' would be the audience receiving those findings.

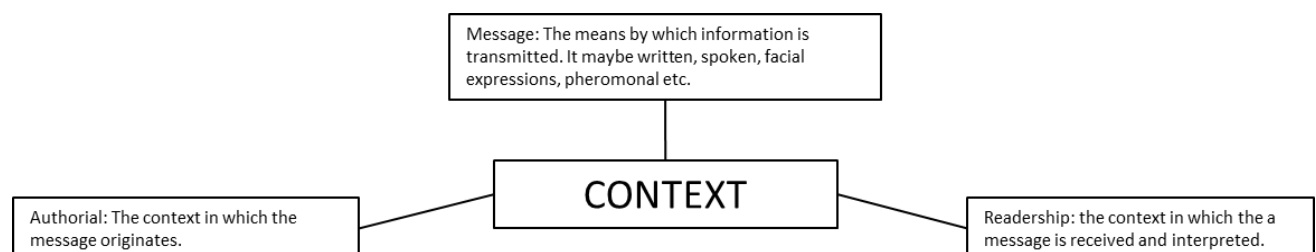


Fig 2.5 Framework of Context adapted from Madden (2000)

This conceptualisation of 'message' marries quite closely to the branch in the McCreadie and Rice (1999) conceptualisation which describes the representation of knowledge. In Madden's model it is implied that form in this context does not have the same assumption regarding the transmission of meaning that McCreadie and Rice identify as being exemplified by publications in the tradition of the scientific method and scholarly publication.

With regard to this research project with its focus on online information use, digital discourse and understanding of online sources, the 'message' element of Madden's context model could be tied to notions of digital literacy and its role in affecting the effectiveness of an individual's ability to consume information (Prensky, 2001, Eshet-Alkalai, 2004, Combes, 2009, de Pontes and Talamo, 2009, Meneses and Momino, 2010). In this way the ability of the individual to 'read' a specific source type or text is vital to their ability to decode the meaning intended to be communicated by the author or to interpret any meaning which their own experience as a reader can bring to the data contained within the text.

While the other two aspects of Madden's proposed model deal with opposite ends of the process of encoding, decoding and communicating meaning within a piece of information they are both tied to the branch of McCreadie and Rice's conceptualisation that deals with the communication process. While the assumption lies within the 'commodity/resource' branch that the reader receives the meaning that the author intended them to, it is through attempting to understand the communication process and the potential power dynamics within, that the context of the other truly interacts with that of the reader.

According to the sources cited by McCreadie and Rice (1999) information in the communication process is the conceptualisation where the human element is most prominent. Rather than static definitions of form, content with almost hardwired meaning or the intangible influence of the environment in which information is delivered and received, this definition claims that meaning is found within people rather than words or data (Berlo, 1960). Knowledge here is seen as what individuals do with data rather than what data does to the individuals (Budd, 1987) and collective knowledge is social and implicit (Spender, 1998).

The authorial context is divided into two distinct elements by Madden (2000). The first, that the message is intended to convey information, is described as being the 'usual authorial context' in which a text is purposefully designed to influence its recipient (Belkin and Robertson, 1976). The second is that the message is not intended to convey information where the author places no meaning in the text; any meaning the reader takes from the text is entirely of their own making. This second

distinction is reminiscent of the assumptions McCreadie and Rice (1999) ascribe to the conceptualisation of information as a representation of knowledge, however it could be argued that no knowledge is collected or represented without a purpose and, as such, can never be truly free from the influence of some authorial intent. For example, in a scientific study why was one measure taken or technique used and not another and what are the consequences for the data produced?

2.7.1.2 Working Framework of Information

This concept of a context through which understanding can be reached is an important one as it helps to bridge the gap between conceptualisations of information and those of the individual. In order to integrate this model from Madden (2000) with the existing conceptualisations identified by McCreadie and Rice (1999), it is the focus on how meaning is communicated and received which seems of greatest significance. Therefore, it is logical to initially use it as a mechanism for adding depth to the branch that deals most closely with human relationships with information and its communication. However, as it addresses the form, the sender and the receiver of information, it remained open that the place of this conceptualisation of context to the human experience of information would be more firmly positioned following the findings of this research project. That is, whether it would be moved within the working conceptual framework to become a branch unto itself or be better positioned as subordinate to one of the other elements. As shown in Figure 2.6 the branches containing the conceptualisation of context are in dotted rather than solid lines to illustrate the uncertainty regarding its place that there was before the research was conducted.

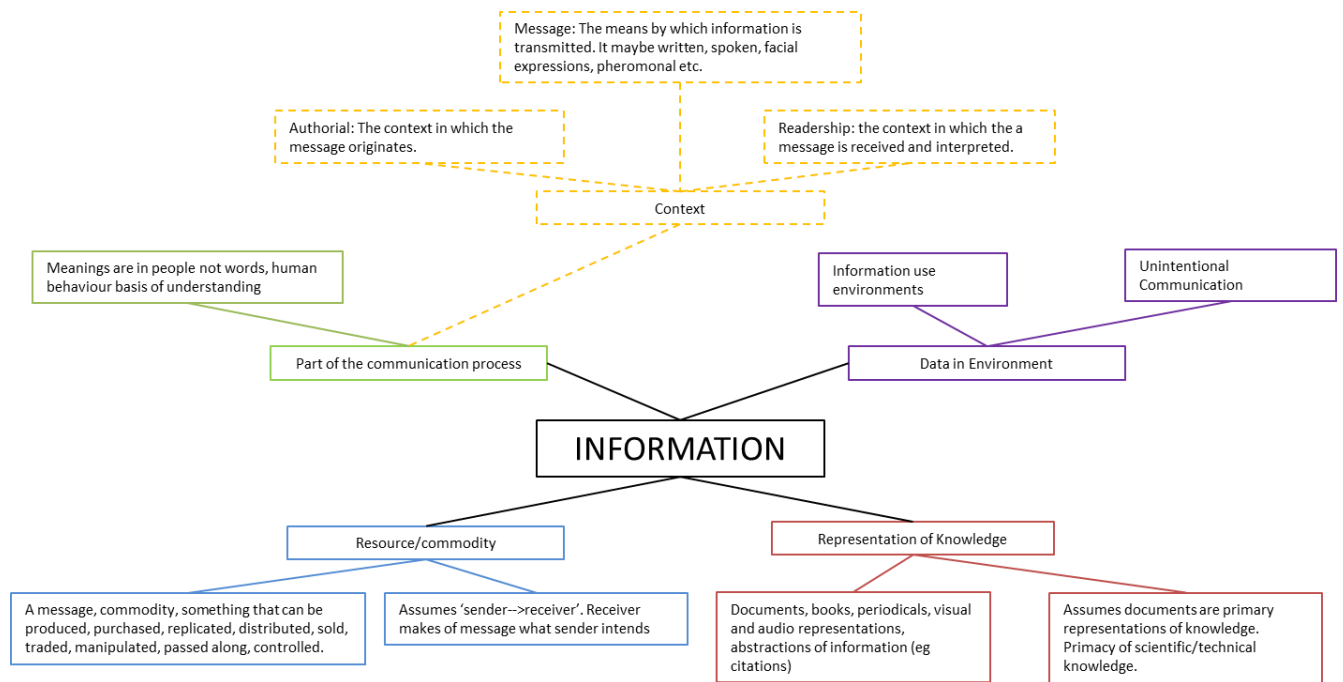


Fig 2.6 Working Conceptual Framework of Information

Another aspect which needed to be factored into this working framework following the research analysis was the issue of access to information. The conceptualisations which McCreadie and Rice (1999) raised highlighted issues which required exploration in much greater detail in the analysis of the data generated by this research. They were also issues which at during the initial stages of the study could have been seen as sub-branches to the conceptualisations already contained within the working framework of information.

Category	Example	Implication
Knowledge	Message sent, information flow, observation, visual source, evidence, documents, books, periodicals, numerical or digital data, databases, citations, analysis, advice, interpretation, debate, answers, education	Can lead to decision-making, control over information flow To quality of life, quality of work life, To power, influence, To socioeconomic opportunities, equity, funds, legal advantage, participation in democratic society and citizenship activities
Technology	Range of technologies and media, computer, telephone, movies, books, newspapers, magazines, music, tv, etc Information delivery systems, systems that generate, store, create information Interface or command language, software programming Use of system Linking technologies, interactive, communication, networking technologies	Assumes that access to technologies leads to access to information, assumes an infrastructure of support Assumes knowledge of how to use Can lead to access to multiple data sources, automatic methods of surveillance, increased control, creativity Compounding effect: access to one technology can increase future access, experience, advantage
Communication	Making sense of things, content, comprehension, retention, explanation Making use of information, accuracy, relevance, format, level, decision making Connectivity Communication competence	Assumes communication competence Requires boarder meaning of relevance Can lead to social, political participation with implications for democracy, equity, power relations Compounding effect: access likely to lead to greater competence, access
Control	Over who has access to what to whose advantage Over the agenda, terms of debate, content, organisation, design, program Over processes and flows of information Over production of culture	Assumes that power and control are associated with information and knowledge Compounding effect: those who control access more likely to decide, design in favour of others most like them
Goods/commodities	Information as social, economic good with value, costs, benefits Distribution of control capacities, availability of resources, New markets for information industry	Assumes potential for public good, social value Value not known until used Compounding effect: potential for economic barriers and paths to be reinforced by social dynamics
Participation	Services, governmental, communication, information, Advocacy Privacy	Can influence right to participate as citizen Compounding effect: those most in need often least likely to obtain services

Fig 2.7 Access to Information adapted from McCreddie and Rice (1999)

This conceptual framework addresses what could be described as the four fundamental elements for understanding of information; its form, its content, the environment it exists within and its interactions with human individuals. It is the last of these which provided the focus for this research as it is the way in which digital discourse may or may not have altered this relationship which it sought to explore. In the process of pursuing this critical exploration the working conceptual framework of

information was designed to evolve as the relative significance of the various elements were revealed and any shifts in understanding were uncovered.

2.7.2 The Individual

As the case of ‘Grandpa Wiggly’ (Bergstrom, 2011) illustrates authentication of an individual’s ‘true’ identity in online discourse is very difficult. The individual is an essentially anonymous actor therefore within the context of this research could perhaps be best understood through two elements which define aspects of the online character, actions and perceptions of them by others. This is illustrated below in Figure 2.8.

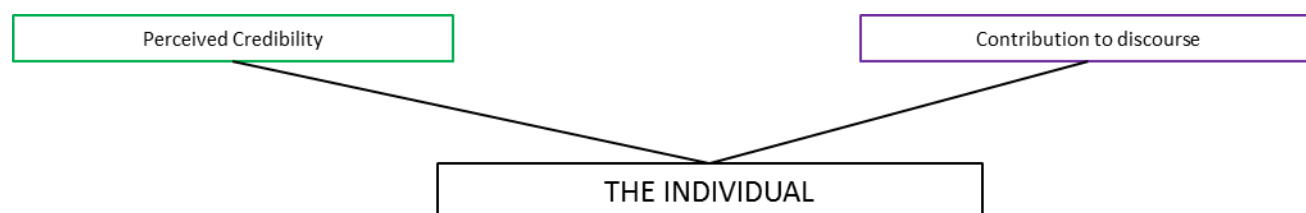


Fig 2.8 Initial Framework of the Individual

2.7.2.1 Perceived Credibility

As the individual online is essentially defined by how they present themselves and how others perceive them it is from this duality that the conceptual framework for the individual was developed. Perceived credibility is how others view the individual online, their personality, their opinions and their expertise, ability and value when engaging with the discourse. Expertise is one of the key factors noted by authors when looking at what factors influence the levels of trust individuals online have in the sources they consume (Lucassen and Schraagen, 2011, Winter and Krämer, 2012). As individuals may not be able to judge expertise accurately, particularly in online social contexts, perceived credibility is a more suitable conception through which to understand this aspect of the individual. Rather than judging ‘expertise’, which may require a degree of authentication not possible or forthcoming within the context of an online discussion forum, Pettingill (2006) devised the concept of a

‘trustee’ as a way of understanding credibility. This ‘trustee’ is a figure seen as having credibility as a source of information even if they are not what may be traditionally as considered an expert. For example, they may be known as an expert in a different subject area to the one which they are discussing but that they are expert in something leads other forum members to believe that they are rigorous and discerning with regard to seeking information on all topics. Alternatively, they may be an individual who has built up a cache of trustworthy and believable messages over their time on the message boards and as such has come to gain a positive reputation for the content of their messages. They have achieved validation within the group as an online persona who can be regarded as a non-expert-expert (Jessen and Jorgensen, 2012). In adapting the work of Tseng and Fogg (1999) Jessen and Jorgensen present the relationship between the factors that influence perceived credibility as illustrated in Figure 2.9.

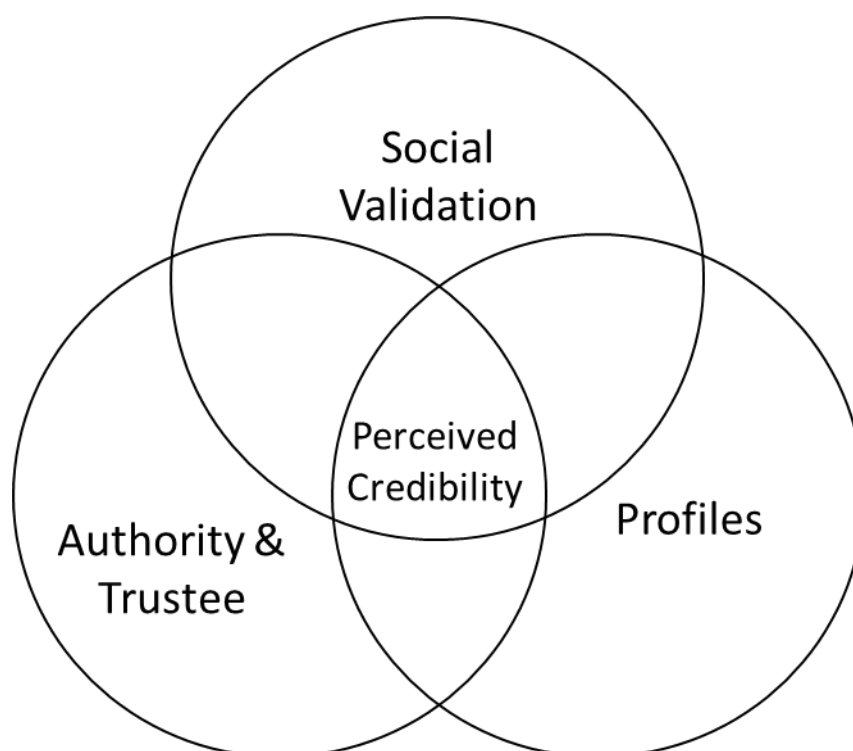


Fig 2.9 Factors influencing perceived credibility adapted from Jessen and Jorgensen (2012)

Jessen and Jorgensen (2012) highlight quantifiable verifiers such as Facebook likes, shares, bookmarks and comments as measures of social validation. Within the forums which this research is focussed upon there is a system of up and down voting posts and comments which is analogous to the examples cited by Jessen and

Jorgensen (2012) as a measure of the value the community places within a particular contribution.

Profiles in this conceptualisation are understood as being the baseline for online identity, the known public face of an individual within a social network or on a message board. While very few websites contain the biographical detail found on networks such as Facebook elements such as the language used when posting, the types of topics commented upon and the nature of those comments all builds a public online identity for the user which will affect how others perceive their character and credibility.

2.7.2.2 Contributions to Discourse

As well as the individual's perceived credibility as a contributor to the discourse, the nature of their contributions is a significant enough factor to warrant its own arm on the conceptualisation in Fig 2.8 above. Contributions to the discourse shape both the character of the individuals involved and the discourse itself in several ways, although it may be possible to try to define several key types of contribution with regard to the form of discourse with which this research will be dealing.

In their work on 'knowledge conversations' within organisations Majchrzak et al. (2013) describe four aspects in which social media facilitates this knowledge sharing; metavoicing, triggered attending, network-informed associating, and generative role-taking. Metavoicing in this conceptualisation is reacting to others' presence, profiles, content and activities online. This is the initial means through which an individual is able to enter and contribute to the discourse of a knowledge conversation. Citing Oliver et al. (1985) Majchrzak et al. (2013) highlight critical mass theory as one means of conceptualising how the contributions of individuals to a discourse, in a bandwagon effect driving more users to a subject, increase the knowledge contribution within the discourse. Although they do also make note that this sort of interaction could inhibit understanding as an outcome due to an increased potential risk of group think. Triggered attending is the notion that users in a social networked environment will remain uninvolved until something within the discourse triggers their interest and draws them into the discussion. While the process for these triggered

attendances, which Majchrzak et al. (2013) refer to, is an automated alert system set up within a corporate knowledge environment, in the public sphere the likes of Google Alerts or manual monitoring could have a similar end result on engagement. Network-informed associating is the understanding of online engagement through the use of relational ties, be they personal or subject specific. In this case users may interact with each other because they have previously known each other or have bonded into a community. Similarly, an individual may pick the aspects of a discourse with which they engage according to the topic's relationship to other interests the individual may hold. The benefit for knowledge communication is that the capital of understanding within the community may be raised as users are able to focus their expertise and are able to apply that knowledge to neighbouring subject areas. The links between individuals may also help to explain how an individual is able to raise their perceived credibility within the discourse as those with strong ties come to identify their authoritative status, which in turn disseminates to those who share weaker ties to the network. Generative role-taking refers to the emergent roles which individuals come to occupy within a discourse. This process is not a formal one in which hierarchies are established but rather a natural process through which roles are adopted by individuals through the interactions with others. These four aspects combine to help in the understanding of how and in what way individuals can become engaged in online discourse and provide clues as to how these contributions will be received by others within that discourse.

As well as these conceptions of contributions to knowledge conversations, the contributions to an online discourse which individuals make can serve other purposes. The contribution to the discourse is defined by the type of user an individual either chooses to be or evolves into. As discussed in section 2.5.3, Brandtzæg (2012) highlights five distinct social media user types - sporadics, lurkers, socializers, debaters, and advanced. As these different types of user are invested in their chosen social media or network to different degrees of intensity, so too will their investment to any discourse within that network. One question which this raised for the research was, does this degree of attachment to the discourse effect the individuals' relationship to the information communicated within it and their attitudes towards others within the network?

One additional element to address when dealing with online discourse, which has garnered a lot of attention in the news media in recent years, is 'trolling' (Hardaker, 2010, Binns, 2012). This type of contribution to the discourse ranges from nuisance posting to aggressive, abusive commenting and attacks, and is a disruptive element of many online discourses today. While not all trolling is of the abusive nature of that which has made news headlines (Cockerton, 2012, Press Association, 2013, Barnett, 2014) in highly polarised discourses such as that on the environment any research conducted has include an awareness that some comments could be by troublemakers seeking to disrupt the discourse.

The issues with user type and behaviour are both contributions to the discourse which are defined by the relationships between individuals within the discourse rather than direct contributions to knowledge itself. However, these peer-to-peer relationships help to shape the virtual landscape in which the information transfers take place and knowledge and understanding evolve. In this sense the interpersonal relationships could prove to be one of the factors which moves public social networks and message boards away from being sites of knowledge transfer and into being uncertain domains in which unknowledge can develop.

With these addition details added to the framework from Figure 2.8 the two branches have now been expanded with additional detail and more complexity as illustrated in Figure 2.10. As with the conceptual framework for information one element in this new framework for the individual is illustrated in a dotted line rather than a solid one to indicate the uncertainty regarding its place at this stage of the research.

'Interactions with others' was part of the expansion to the contribution to discourse branch of the individual but while it would break with the distinction of one main branch dealing with self-presentation and the other with its reception there could have been a case made at this stage that it belonged as a distinct third main branch. When devising this version of the conceptual framework, however, the case for a third main branch was still uncertain and the decision was made to revisit its significance as part of the discussion of findings following the data analysis.

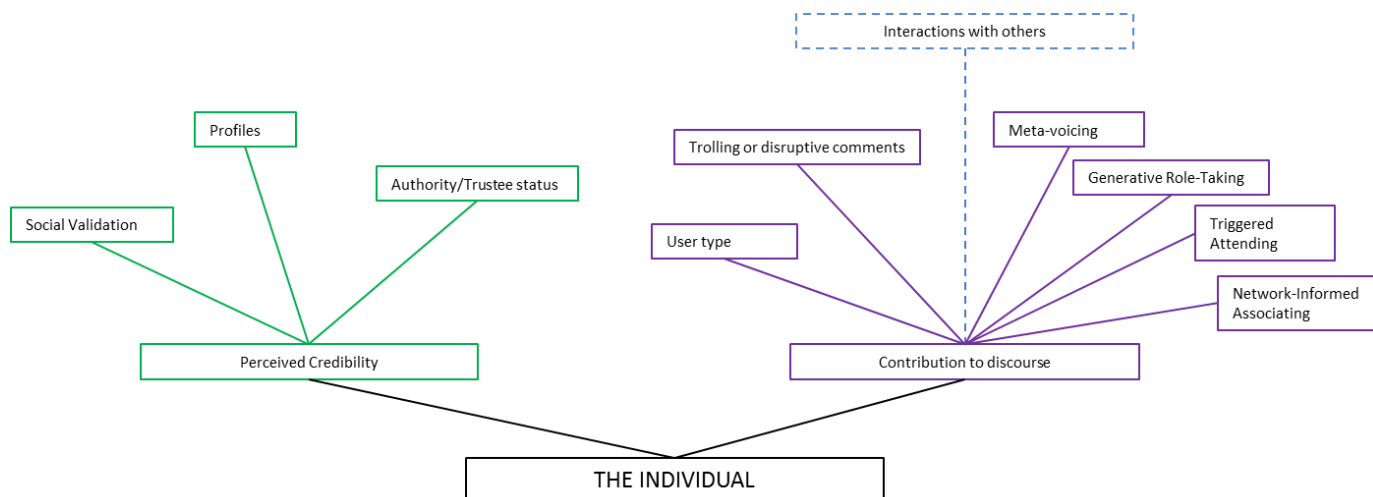


Fig 2.10 Working Conceptual Framework of the Individual

2.7.3 Relationship between Information and the Individual

The relationship between the individual and information is key to this research and the elements which are missing to unite the frameworks for the two are those of meaning, intention and understanding of information and its use by the individuals. This space is where questions needed to be asked regarding the information literacy of the individuals taking part of the discourse, whether the discourse provides any clues or evidence of an evolution in their understanding of information or whether something else is happening.

Combes (2009) asks the question whether it could be that the so-called digital natives, who are the likely demographic for online discourse, are lacking in the skills required to adequately evaluate and use the information which they find online. These users, Combes suggests, possess highly developed digital literacy skills but lack traditional information literacy. (Rheingold, 2010) has written that as well as being digitally literate and information literate, Web 2.0 and social media require their own particular set of skills to navigate, a new social media literacy. This social media literacy put forward by Rheingold has five elements; attention, participation, collaboration, network awareness, and critical consumption. If Combes (2009) is correct then it is likely in the application of the last of these elements which could cause the breakdown between text and meaning which the 'unknowledge economy' concept seeks to identify and define.

A potential bridging framework which factors in the mediating skills of digital, information and social media literacy as the conduit through which meaning is communicated from information to the individual and through which individuals' intent in return influences the understanding of information is shown in Figure 2.11 below:

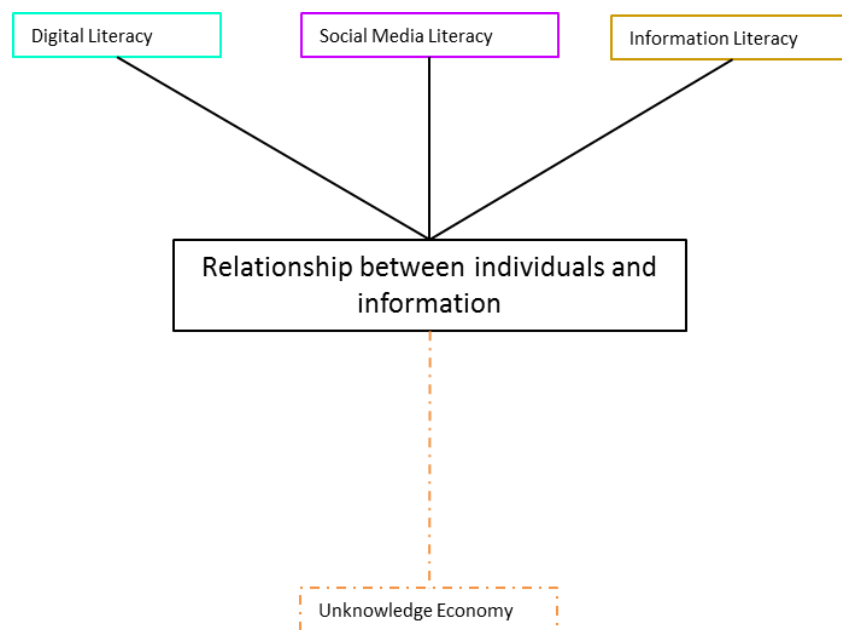


Fig 2.11 Bridging Framework for the Relationship between The Individual and Information

It is through the application of these three frameworks, information, the individual and the bridging piece and the conceptualisations which they illustrate that the rest of the research was underpinned and guided. In so far as this research was concerned it is the definitions contained within this combined framework that are the ones used throughout the research, its design, execution and the discussion of its outcomes.

2.8 Summary and Outcome

Due to the broad range of themes which this research touches upon this chapter was designed to provide an overview of these themes and to then create a working conceptual framework based upon the literature which has been considered. In section 2.2 three high level models of information literacy were examined and due to the messy nature of the online discourse which this research was designed to

critically investigate further studies where reviewed in order to provide more complexity to the understanding of information literacy within the scope of this research. Section 2.3 focused upon more specialised literacies in media and digital literacy, these are related yet distinct competencies within the wider context of information literacy. This section illustrated that as well as being able to understand the content of a piece of information when navigating an information environment as complex as the internet an individual also requires the ability to decode the visual language of websites. This comes through a holistic comprehension of technical, social and cognitive skills working together.

As sections 2.2 and 2.3 dealt with the competencies of individuals as information seekers section 2.4 considered the issue of trust in sources, particularly online. In this section it was found that if dealing with information use environments such as the discourse which this research was to study that trust in a source isn't necessarily based upon signifiers within the source itself. One aspect of trust of particular relevance was the potential position of an individual as a 'trustee', someone who need not be an expert in a field but is considered reliable enough to be able to convey trust in a source via their endorsement.

The role of the individual and development of social media was covered in sections 2.5 and 2.6 these are complimentary sections as the increasing complexity of the roles and definitions of the individual in online discourse is something of a product of the increasing complexity of social media. As individuals have been given more platforms and more opportunities for engagement so the volume and the intricacy of these engagements has increased. This research partly questions the notion of a creator-consumer binary and social media has been seen as a driver of the breakdown of this relationship.

The essential outcome of this chapter was the working conceptual framework. This took elements from across the literature and refined them into a conceptual framework which itself defines two core concepts for this research, information and the individual. This framework is referenced as the working conceptual framework as the research sought to uncover emergent qualities from within the data that built upon existing knowledge and could be critically analysed with regard to the aim and

objectives of the research. As such this working conceptual framework stood as a directing template which was to be adapted so as to illustrate the new conceptualisations of information and individual as they would come to be understood within this context of digital discourse.

Chapter Three

Methodology

3.1 Introduction

Rooted in the existing literature on the subject and the needs of the research questions, aims and objectives of this thesis this chapter discusses the research methodology. It begins with a theoretical discussion surrounding epistemological and ontological understanding of the research. This theoretical base informs the discussion regarding the research approach and choices in methods of analysis used in this thesis. An outline of the research methods follows, including the development of a template which can be expanded and developed as the findings come to address the questions asked by this research. The following section is an explanation of the practical techniques used in the data collection with a discussion of the process of the analysis. This method was tested via a short pilot study which is discussed alongside the changes and adaptations which came about following its completion. The final section in this chapter is a discussion of the data analysis process which was used in the main study.

3.2 Research Position

In reformulating the research problem as a question, 'is digital discourse within the context of the online information explosion rendering all information effectively subjective?', the philosophical underpinning of this research becomes visible. The ontological position is that of a critical realist stance but one that leans strongly towards a more interpretivist understanding of the way in which social contexts build realities. From this standpoint, meaning is not entirely fluid and constructed by individuals, although the understanding and interpretation of a piece of information could be. For example, a measure of temperature change of 10°C is a measure of a 10°C change in temperature but what is understood by that and what that means within a social construct may become effectively subjective.

An understanding such as this means that, while the underpinning assumptions within the research are that there are facts which may be considered definitive facts, it is the interpretation of them where the interest lies. As such the research holds that there is a 'best reading' of information, or of information which deals with those most definitive facts, and that it is through social negotiation that individuals in wider society come to understand the information they consume. While information may have objective qualities, the reading of it is subjective. For the researcher to understand the manner in which this reading is negotiated an interpretive qualitative methodology was the preferred approach to critically explore human negotiation and construction of these readings.

While drawing the distinctions between multiple interpretative epistemologies Schwandt (2000) notes that they all share three characteristics. They view human action as meaningful, both performed with meaning and within a system of meaning, they show an ethical commitment in the form of respect for the 'life world', and they share an emphasis on the contribution to knowledge of human subjectivity whilst retaining a sense of the objectivity of knowledge. It was this latter factor in particular which helped define the approach which was the key foundation for this research. The idea that human interaction can be subjective, taking place within a constructed framework of meaning and through the use of language, changing the individual's perceptions of their environment while knowledge maintains an objective empiric grounding, was the understanding which the notion of the unknowledge economy sought to bring to online discourse.

In developing from this position and in order to produce an emergent conceptual framework to understand this unknowledge economy, then the research informed by this interpretative underpinning focussed upon the human element of this phenomenon. Schwandt (2000) points to Peter Winch's writing on 'language games' and the attempt to understand these 'games' as systems of meaning, coupled with the concept of *Verstehen*, as a way of developing an understanding of human interaction through the analysis of language. As the focus of this research project was digital discourse which, by its very nature takes place almost exclusively through

written language, this approach appeared to provide the level of understanding necessary to answer the research question as fully as possible.

Within the social sciences *Verstehen* has been seen as a method to gain understanding of institutions and social knowledge (Nielsen, 1982). Thus, as discussed by Nielsen, given the structures in which digital discourse takes place, and that Winch's concept of understanding requires the notion of a developing tradition, concepts such as this could address some of the structural issues within online communities. These communities are currently moving through stages of social evolution which lead to the development of traditions and norms as online life matures through Web 2.0 and the conventions which have accompanied this stage of web evolution become more established. In educational research Winch's ideas have been reappraised according to their value of understanding the role of social interaction in practice (Smeyers, 2006). This evolution was one of the defining factors in beginning this research project and the social and language based approach was not only likely to yield quality results but would also maintain an objective distance between the researcher and the subjects of the research. This distance was necessary as, in critically examining the behaviour between individuals and the information which they use and distribute, any researcher influence could alter the natural behaviour of the research subjects. In interpreting the understandings held by the subjects of the research the prospect of an emergent understanding of their actions and experiences could be obtained and used to develop the conceptual framework which had been adapted from the literature review.

As Morehouse (2012) notes in his introductory text on interpretative research, the Heisenberg principle states that to observe something is to change it, for Winch (2001) this means that the predictions and results drawn from the research are dependent on the observed person rather than the collected data itself.

In approaching the research and its subjects from this ontological position, one which frames its world view as recognising that individuals play a role in constructing the reality which they inhabit, the flexibility existed to acknowledge and examine as many facets of digital discourse, its participants and its consequences for information

as possible. While the research recognised the empirical weight and accuracy of some information as factual, temperature measurements for example, an interpretivist approach allowed for a more broadly constructivist rather than purely positivist understanding of the nature of information. It is this distinction which helped in the understanding of how information may have its meaning altered through digital discourse to become effectively subjective in the eyes of the individuals who are interacting with it.

While the research aimed for emergent findings, rather than attempting to prove an existing theoretical position the design required a degree of robustness upon which to base the critical exploration of the collected data. In order to build a working conceptual framework for this project it was necessary to identify and clearly define some key terminology. The terms which addressed here are those which helped to outline the focus of the research and highlight the key pillars of the study.

Information

- The information which this research was interested in to factual claims; statistics such as scientific findings or financial figures which have some empirically measurable element to them. Other forms of information such as personal details were identified as such when raised.
- It was information within the digital sphere which this study was interested in examining. While the same facts may be replicated across television, print and online media it was the unique circumstance and interactive capacity of online information and discourse which this research critically investigated.

Digital Discourse

- Digital Discourse was the term which this research used to identify the interactions between individuals online.
- As well as being the interactions alone, in order to create some scope as to what was of relevance to the research, the term also referred to the online space in which individuals and established media are able to interact with one another sharing views and information. This online space is composed of social networks such as Facebook, Twitter and Tumblr,

online forums such as Reddit as well as private or specialist forums, video sharing services such as YouTube and DailyMotion, numerous blogging and personal website services, and the lively 'below the line' comment sections which the websites of many traditional media outlets share.

The Individual

- The Individual as conceived within this study is a unique agent acting within digital discourse not defined by a binary split between a creator or consumer role but a fluid identity able to take on multifarious roles.
- An extension of this aspect was that while the research was interested in the relationship between those who could be considered traditionally as lay-people rather than experts, a potential consequence could be the blurring of the lines between expert and non-expert within definitions of the individual online.

These definitions were underpinned by an understanding of the nature of knowledge construction which views it as social and embedded within information consuming, producing and sharing communities (Talja et al., 2005). Viewed from this perspective, the fluidity of individuals' roles, and the position of information and individuals within digital discourse, are all aspects which could contribute to a shift in the individuals' experience and understanding of information. Facts could become more freely detached from the meanings and representations previously agreed upon, rendering even empirical data effectively subjective.

As this research aimed to critically engage with and explore the context of digital discourse and its effects, the outcomes were intended to be emergent from the data, driven by the behaviour observed within the discourse. In order for this exploration to provide a better understanding of these possible effects a high level of qualitative insight was required. As discussed below a research method and data collection and analysis techniques well suited to acquiring, handling and examining significant volumes of information rich data were employed in order to provide an appropriately large data set to explore. However, while the research investigated using interpretative techniques, it must be acknowledged that some of the key ideas behind the conception of knowledge and information within the unknowledge

economy do hold closely to the framework of knowledge Talja et al define as 'collectivist' or social constructivist (Talja et al., 2005). This was particularly true of the idea that knowledge is mutually constituted rather than defined by an individual's own mental modelling and experience. A further division into 'communal constructivism' (Scrimshaw, 2001) may provide additional insight into how individuals can learn and develop as groups but this is an issue which evolved in importance in analysing research outcomes than in the initial research design as much of its framing of knowledge and interaction does not differ significantly from social constructivism.

3.3 Method and Research Design

In order to address the issues raised by this research a method that fits with the qualitative nature of the study and was robust enough to deliver meaningful conclusions in the end was required. As this research was focussed on human interaction, the effect it has on those taking part and the context in which it takes place, then a form of ethnographic research appealed as it would hopefully provide suitable insight into user behaviour. In considering that the environment which the data would be taken from would be online text based discussions, Robert Kozinets' work into 'Netnography' provided the best method with which to perform this type of research (Kozinets, 2012). Drawing on this work and with consideration given to the limitations and practicalities of conducting the data collection the following is a discussion of the method undertaken for this research.

Kozinets (2012) cites the basic tool of online data capture is to capture screen shots of the activity which is of most interest. In other words, images taken of the interactions, preserving them for the researcher just as an individual using the website under normal conditions would do. Alternatives suggested as netnographic data collection techniques, by Kozinets, included downloading onscreen text as text files for later analysis and the use of specialised software to automatically record activity within the community. The advantage of this research method was that it would be able to capture large amounts of detailed data taken from real-time social interactions which could be broken down and analysed through interpretive textual and discourse analysis in order to identify any emergent patterns there may be within

the discourse and the information usage contained therein (Smeyers, 2006). Kozinets (2012) highlights that conducting online interviews has much strength when it comes to gaining a phenomenological understanding of the lived experience of an online community and the nature of the relationships between members of that community. However, he also warns that interviews may not be suitable for drawing wider generalisations regarding a particular population. In the case of this research the aims and objectives meant that any influence of the researcher on the subjects would taint the potential results in a manner which would undermine the focus of the research. As such the decision was made that the netnographic techniques to be used would be those rooted in observation of, rather than direct engagement with, a digital community.

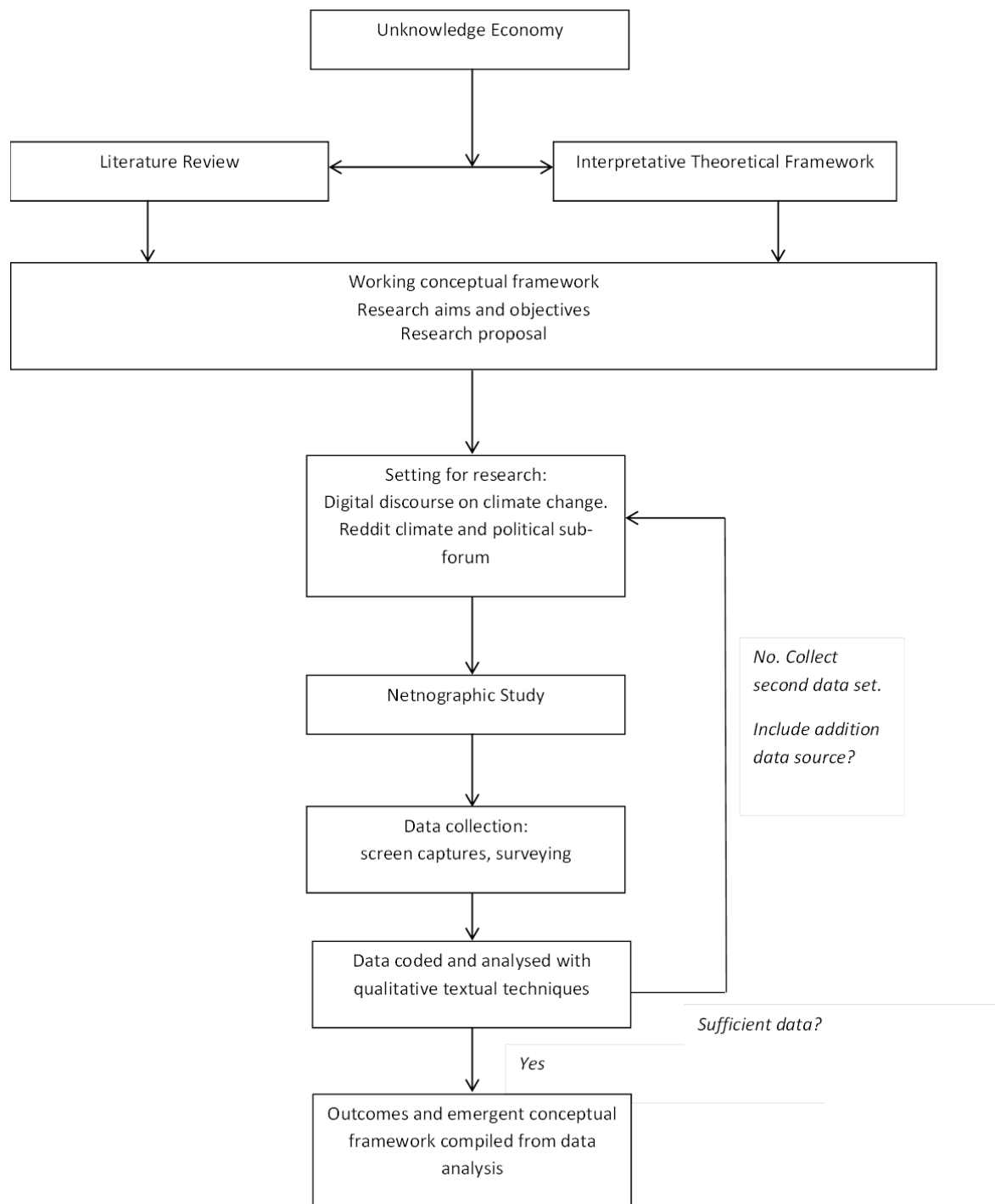


Fig 3.1 Initial Research Design adapted from Pickard (2013)

3.4 Data Source

The issue chosen as the topic to topic for analysis were the debates and discourse regarding climate change and the controversies over man's culpability in fuelling whatever changes may be happening to the environment. This is an area of digital discourse in which the natural dimensions of the discourse have created conditions well suited for the investigation of phenomenon such as that of the unknowledge

economy. In order to critically explore the nature of individuals' relationship with information within this discourse this research did not intend to question whether one side of the debate was correct and the other incorrect with regard to the climate change topic but only to critically investigate the interactions between users and their use of information within the context of this issue.

Within the discourse on climate change, both digital and traditional, the discussion is rooted in information, its meaning, its interpretation, its credibility and distribution. This provided the researcher with benchmarks against which to assess some of the knowledge claims which may have been made within the discourse, as academic climate researchers have published their data in peer reviewed journals. However, it is also a discourse in which conflicting narratives each have trusted sources and experts, and as such the scope for individuals to interact upon a 'level playing field' exists.

While an emotive subject to those fully immersed in the discourse (Musser, 1994, Nisbet and Myers, 2007, Wood and Vedlitz, 2007) the grounding of climate science in empirical data (EEA, 2013, IPCC, 2013) avoids some of the pitfalls which other highly charged social and political issues may have. A similar study carried out within the discourse regarding social care, immigration or law and order could have proven substantially more problematic in their usefulness for analysis when the initial working conception of the unknowledge economy was so loosely defined.

The subjects of the study needed to be an active group within the digital discourse on climate change. Such a group was identified by researching the existing literature on online socialisation and through conducting online observations into the discourse. The large discussion website Reddit provided a highly suitable case to investigate. The Pew Research Center found that, of the 2252 US adults whom they polled regarding their internet usage between April 17 to May 19 2013, 6% responded that they were Reddit users (Morehouse, 2012). Given that a similarly sized study carried out by Pew into US adult social media use in December 2012 found that 67% of those surveyed used social media with 67% of those using Facebook, 16% using Twitter and 6% using blog-platform Tumblr, then Reddit usage is fairly significant amongst active internet users. It must be noted, however, that

while Pew's Internet and American Life programme provides a firm indicator of user trends it presents some of its findings as being representative of national trends in a manner which may not be entirely accurate. On climate change Reddit currently hosts several 'Subreddits' directly related to the issue; these forums on Climate (Reddit, 2013a), Climate Change Skepticism (Reddit, 2013b), the environment (Reddit, 2013c), as well as political discussion boards with climate change subtopics within it may be a suitable situation for the research to take place. At the time of writing these Subreddit forums currently have between 5000 (Climate) and 100,000 (Environment) subscribers, although not all of these are likely to be full time active users. Reddit's role as a 'social news aggregator' in which the users of the website help to dictate the 'value' of the information shared upon it adds an interesting and relevant dimension which increases its potential value as a source of research data (Schwandt, 2000).

As a public web-based presence a site such as Reddit has minimal 'gatekeeping' obstacles, as one simply needs to register with a valid email account to become a member of the community. Utilising Brandtzaeg's understanding of the types of individual behaviour within online communities having entered and introduced oneself the researcher could simply 'lurk', ie not participate directly in the discourse whilst remaining a member of the community able to observe (Brandtzaeg, 2012). This would help to satisfy an issue raised by textbook guides to ethnographic research with regards to the researcher becoming a burden or disruption to the community (Nielsen, 1982). The 'lurker' as observer also feeds into the idea of 'auto-observation' (Denzin and Lincoln, 1998) as the researcher could be present and immersed within the subject environment, able to gain additional insight through the everyday reality of the subject area, whilst remaining distant enough to obtain objective observations.

3.5 Data Collection Process

With the Netnographic research method the type of data it would generate and the type of analysis it would require would be very labour intensive, therefore the timescale for the period sampled needed to be adjusted appropriately. However, one potential issue was, in dealing with a live topical subject such as Climate Change, that collecting data during a 'quiet' month in the discourse could yield very different

results to those during times of greater activity. Therefore, a single event around which to centre the study was selected. This decision was informed by adopting some of the techniques of critical incident technique. In outlining what characterises critical incident technique Hughes (2007) defines it as investigating the experience of individuals through their relationship to a significant event. These events need not be huge world changing incidents but they are of importance to those involved. The technique has also been highlighted as very useful in providing ‘thick description’ giving researchers valuable insight into actors within organisations (Bott and Tourish, 2016). This detail is of particular use to theory building in the field, and given the online space which was the target of this research and the emergent nature of its intended development, this was an ‘in the field’ style piece of research. Selecting the sample period in this manner resulted in the data collected being taken from a period in which there was a high level of activity within a relatively short time span.

The use of an interpretative methodology rooted in an evolving understanding of the systems of meaning within which individuals interact pursued through a thorough Netnographic research study provided quality data which could be analysed and understood through the language and interactions of those taking part. This in turn provided the necessary feedback to develop an emergent framework through which other or future aspects of the effect of digital discourse on information, and the role of the individual could be understood. Due to the data collection process requiring adjustments and changes throughout its initial implementation the detailed descriptions of its development and subsequent changes are discussed in greater detail in sections 3.6.1.1, 3.6.2.1 and 3.6.3.

3.6 Pilot Study

A short pilot study was carried out in order to trial the data collection and analysis process, testing these processes the pilot investigated the suitability of the working conceptual framework of the research as well as the practical application of tools used in handling the trial dataset. This review of the pilot study will look first at the planning of the pilot study, before examining the data collection method, the process of managing the data, and the detail of the data analysis before closing by outlining some of the adaptations which this trial indicated as necessary for the research.

The research design for the pilot study followed closely that outlined in section 3.6.1.1 of this chapter with data collected through the use of online tools and managed through the use of desktop software, with the analysis utilising the application of the conceptual framework to understand the nature and content of the discourse taking place with the data. This process is illustrated in the diagram below (Figure 3.2) and covered a dataset taken from three Subreddit groups discussed in section 3.6.1.1. In this diagram the uppermost two levels deal with data collection after the sample has been selected, the following two levels represent the stages of managing the data and sorting it into predetermined categories. After this level, at which threads are divided according to their relationship to the chosen subject of the research, the remaining steps deal with the stages of analysis of the data before reaching the findings at the end of this process. The data collection and sorting processes are described in the following section along with a description of the analysis process as it was for the pilot study. This section is followed by a review of the lessons learned during the pilot study and a conclusion which collects the actions which were taken moving forward into the main research study.

Data collection took place between 20/11/13 and 27/11/13 as originally intended although data analysis did not begin until the week beginning 20/01/14. Despite the break in dates between collection and analysis this stage was completed within a total four week timescale although there were some initial problems related to a structural issue discussed in the section below on lessons learned and some data was lost. This had to be collected a second time following a failed recovery. As the failed recovery was related to the amount of data being moved from one folder to another it was determined that during the main research data collection additional back-ups would be prepared.

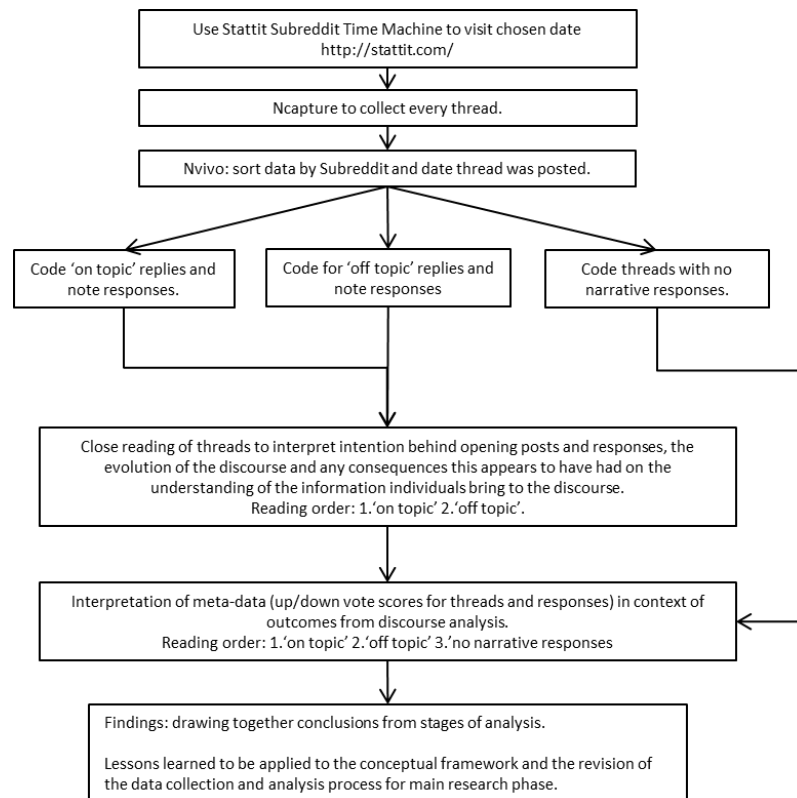


Fig 3.2 Data Collection and Analysis Process for Pilot Study

3.6.1 Pilot Study Process

3.6.1.1 Data Collection and Sorting

The sample for the pilot study was drawn from the same selection of Subreddits which the main study was intended to use, r/Environment (Reddit, 2013c), r/Climate (Reddit, 2013a) and r/Climateskeptics (Reddit, 2013b). To test the suitability of the critical incident technique for this research this data was a smaller sample selected using the same criteria used to select the incident for the main study. This sample was originally intended to cover the period of the week leading up to the publication of the European Union's Climate change, impacts and vulnerability in Europe 2012 report (EEA, 2012) and the week covering the response to the publication. However, due to an error in the external search resource (Deimorz, 2013) being used to access the Subreddits not connecting to the period covering the week following the publication of the report a smaller sample was collected instead. This eight day period included the six day lead-up to the event, the day of publication and the day

following publication intended as a snapshot of the community and its reaction to a critical event similar to that of the sample for the substantive study of this research.

In order to harvest the threads from the Subreddits on the correct dates the Stattit Subreddit Time Machine (Deimorz, 2013) was used to locate the sample and Ncapture (QSR International, 2013) to capture the information. This process worked highly effectively and results provided came in the form of .pdf files which contained the complete contents of each thread started on each chosen date, as well as all of the historical responses to those threads. These captured webpages were then imported into Nvivo (QSR International, 2012) for analysis. In total the pilot study collected 494 separate threads.

As the threads were imported into Nvivo they were sorted into subsets, according firstly to the Subreddit from which they came and secondly the date on which the thread had been started. This was done as the analysis process intended to analyse each Subreddit individually and in order to follow the evolution of the discourse then the retention of the date structure was a necessity.

The next step sorted the data into categories for analysis. These three groups represented different interests within the research, the first to be separated out from the data set those which contained no written responses to the opening post of the thread. The remaining data was then divided according to whether or not the threads were dealing with climate change or broader environmental issues, referred to as 'on' and 'off' topic respectively as the research was focused on the discourse around climate change. The sorting for these two distinctions was executed by analysing the content of the opening post of the thread alone.

3.6.1.2 Interpretation of narrative data

Following the collection and sorting of the data the next step in the data analysis process was to analyse the text of the discourse. This was done by applying the conceptual framework for the individual, information and their relationship detailed in Chapter 2 to the data, through the critical examination of the opening posts and

narrative responses within each thread. The threads were read and analysed according to their original order as an individual user would find them upon visiting the webpage. The reasons for using this order are discussed in detail in the sub-section on data collection in the lessons learned section of this review.

The original ordering for threads on Reddit is not linear but rather threads are ranked. As discussed in section 3.6.1.3 on meta-data the ranking system gives structure to the threads but also imbues it with some unusual characteristics, which results in individuals debating with one another across time as well as space. Within each thread responses are listed beneath the opening post, but responses to those replies are not listed in the same verticality but nest alongside the response to which they refer meaning that each discussion thread can be made up of several separate yet concurrent conversations on the same topic. Despite this it was possible to apply the conceptual framework through a close reading of the discourse to draw some meaning and understanding from conversations.

As well as this close reading of the comments made by individuals within the discourse the analysis of the narrative data also included some coding within Nvivo related to the nature of the information being discussed. In order to examine whether online discourse and sourcing of information has effected the ability of individuals to distinguish between 'facts' and 'falsehoods' sources were coded into groups defined by the type of source they were. The original categorisations were settled upon as initial broad categories based upon trends identified within the literature which point to the importance of news and blog websites in individuals information consumption (Gunter, 2009, Vraga et al., 2011, Pew Research Center, 2012, Winter and Krämer, 2012). These were supplemented with related sources such as a distinction between 'news' and 'comment', and the addition of academic sources as another possible credible source. The original groups were as follows:

- Academic journal or publication

- Magazine articles

- News article

- Opinion or comment piece

- Personal blog entry

Professional blog entry
Personal vlog entry
Professional vlog entry
Video news report
Documentary video

3.6.1.3 Interpretation of meta-data

The question of meta-data in this study is one which was not directly addressed by the conceptual framework used in the data analysis; this was because the meta-data contained within a Reddit reply consists only of a time stamp and a vote score. The time stamp, however, is too vague to be of significance. For example, as the dataset used was a sample from November 2012 all of the time stamps for individual posts merely read '1 year ago'. Any chronology of the replies had to be built from a reading of the content of the posts and an understanding of the nesting system which Reddit uses to link replies to original messages in sub-threads.

During the pilot study the issue of time stamps was primarily a structural concern which became an issue addressed during the data collection and sorting phases of the process. The second issue, the vote scores, was addressed following the analysis of the narrative responses in an attempt to gain an understanding of what they might represent to the community. As the votes appear to represent a shallow measure of value initially, their value and place within a working framework needed to be established through an understanding of the context in which they sit. During the pilot study having analysed the narrative responses the analysis of the 'upvotes' was focused upon on looking for contextual clues as to how they were viewed and used by the community in order to deliver a conceptual understanding which could be carried into the main study.

3.6.2 Issues raised

A number of issues were raised by specific aspects of the process or emerged within the data as the pilot study progressed lessons were learned from these issues. This section covers issues related to data collection, the sorting of the data, the interpretation of the narrative data, the categorisation of the sources shared within the discourse, issues related to information to which access was denied or restricted, and the interpretation of the meta-data.

3.6.2.1 Data collection

One early issue which was raised by the data collection was that the structure of Reddit, and the Subreddits, is asynchronous. On the front page of any individual Subreddit forum the threads are listed according to a ranking which is determined through an algorithm based on time and user interaction (Salihefendic, 2010, Springer, 2013) meaning that the top thread is neither the newest or most popular in a conventional sense but a combination of the two. As Salihefendic (2010) notes, it is not as simple as more votes being equal to a higher ranking either; the upvotes, as they are known, are weighted. “The first 10 upvotes have the same weight as the next 100 upvotes which have the same weight as the next 1000 etc...” (Salihefendic, 2010).

As this research aimed to understand public interactions with and understanding of information through analysis of online discourse it seemed logical to attempt to reorder the dataset in order to impose a standard chronology upon it. Doing this would have allowed the researcher to follow conversations and track possible evolutions in understanding in a linear manner. However, as Reddit is not structured in a linear chronological manner its users do not approach the information shared within its forums in a linear chronological manner but are instead greeted by the ranked pages. In order to best analyse the dataset in a way that properly sought to understand the nature of the discourse within Reddit the decision was made to

maintain the original structure and integrity of the collected data. This way the research approached the data in the exact same manner as an individual user would do, seeing the top ranked information and conversations at the top of the webpage and having to piece together the chronology of the discourse within. Figures 3.3 and 3.4 below demonstrate the clear difference between a forum displayed as ‘ranked’ in contrast with the same forum displayed chronologically with the most recent new threads shown first. The order of threads has changed so much between these two views that there are no threads which appear in both screenshots.

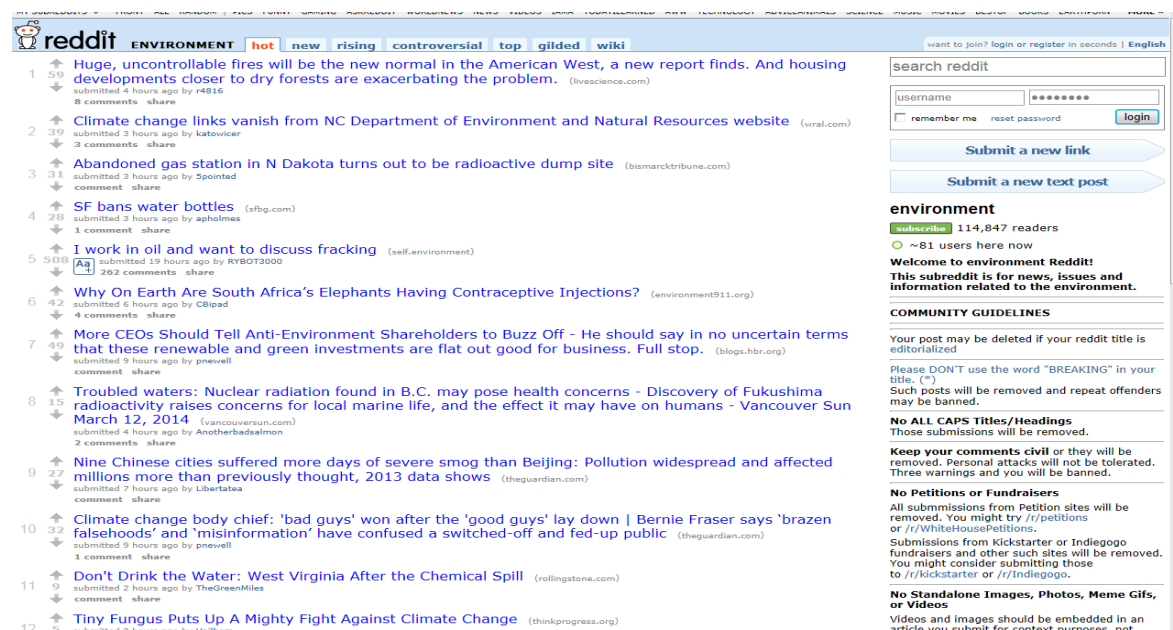


Fig 3.3 Example of Ranked Page

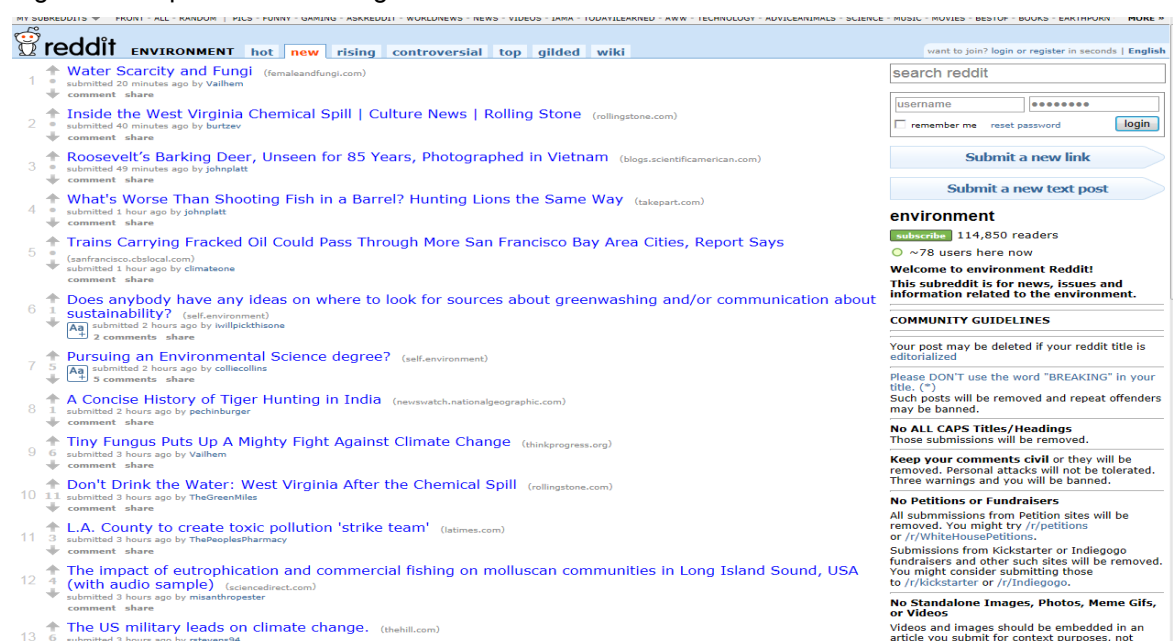


Fig 3.4 Example of Chronologically Ordered Page

3.6.2.1.1 Sorting Data

As the pilot analysis goes on to demonstrate the level of subdivision between ‘on’ and ‘off’ topic thread types did not prove adequate as the discourse within the threads often strayed so that some on topic opening posts may receive off topic responses, and threads discussing off topic issues may stray on side. This issue was clouded further by the division of those with no written responses being categorised solely by this judgment alone and not initially coded as being either on or off topic at this stage of the analysis.

In order to provide a richer understanding of the nature of the discourse for the research proper this issue of sorting the threads by topic led to the adaptation of the research design to include a multi-level breakdown. This multi-level breakdown separates the threads as follows:

- On topic which remain on topic in the responses
- On topic which become off topic in the responses
- Off topic which remain off topic in the responses
- Off topic which become on topic in the responses
- Threads which are on topic and have no narrative responses
- Threads which are off topic and have no narrative responses

While the analysis of the content of the discourse did investigate this ground later in the process, having the threads sorted in this way from the beginning assisted in providing clarity and increased the ease with which particular trends in the discourse could be uncovered.

3.6.2.2 Interpretation of narrative data

Due to the timing of the sample, in the run-up to a large international climate change impact report but also coincidentally covering the fall out of a BP oil spill, the higher ranked threads which contained the most textual data were quite emotive in tone. However, the call for ‘links?’ was quite often seen within the text suggesting that individuals were always questioning the assertions of others. During the period

covered there was no obvious indication that individuals were seen to take on roles such as that of the trustee in a position of credibility across multiple threads but rather credibility seemed to have to be re-established in every new thread. Across multiple nested sub-threads within one conversation individuals seemed to go through the process of generative role-taking for that topic at least. This need to seemingly have to reestablish credibility at irregular intervals indicated a need to cross-reference threads in order to more accurately map the role of the individual within the discourse.

One issue which arose throughout the interpretation stage was the tendency to categorise responses or individuals according to an agree-disagree binary which did not capture the richness of the individual within the context of this discourse. This could be a consequence of the nature of online discourse which can be seen as an adversarial method of communication, Popular Science even turned off its comments sections because of this aggressive polarising side to online discourse (LaBarre, 2013). In the sample taken for this pilot study there are examples throughout in which the subthreads which branched out within a thread could be identified as a small group, or possibly even two individuals, engaging in an adversarial manner. While the worry of oversimplifying the discourse remains a possibility, it must be recognised that these kinds of interactions are characteristic of online message boards and a way to account for the behaviour of these individuals should be addressed in greater depth. Perhaps due to the policing of Reddit by moderators, these polarised exchanges, and individuals' behaviour within them, are not the same as nuisance users and 'trolls' (Hardaker, 2010) for which the framework had already accounted.

3.6.2.2.1 Source type categorisations

While the categorisations broadly covered the distinct types of information source which were likely to have been shared in an online discourse regarding environmental issues these distinctions proved to be inadequate. Over the course of the pilot study the diversity of sources discussed meant that an increased granularity in the categorisation emerged from the data. These new subdivisions and categorisations included news articles being defined as either mainstream, national

newspapers or broadcasters, non-mainstream (smaller online sources, news aggregator sites and specialist or partisan news websites) or local (regional news publications). Separate again from non-mainstream and specialist news sources were activist sites independent from those providing specialist, skeptical or partisan coverage. Links to sites which were effectively infomercial style advertising were also found, as well as links to image galleries or even single images.

One of the findings from the pilot study was that certain source types were more likely to be linked to from the Subreddits that were analysed, as well as a preference towards different forms of information. Increasing the granularity of the categorisations at this stage allowed for the development of threads of analysis looking more closely at individuals' exposure to certain kinds of information and the credibility which they appeared to place upon them. This increased number of distinctions for source types was a product of the emergent nature of the research as new categories were added as they were revealed within the data. In seeking to answer the question of whether individuals are finding it difficult to distinguish facts from falsehoods discovering whether particular information types are trusted and which sources are validated by the community is a valuable aspect of the analysis.

3.6.2.2.2 Restricted access to information

In categorising the information sources which individuals were sharing within the Subreddits, some sources had to be categorised as dead links or that they were unavailable behind a paywall. As the issue of access to information is one which plays a part in this research these are two interesting elements which some of the links possess despite being a tiny minority of sources. Dead links, links which do not reach the webpage they are supposed to, were perhaps easier to address than paywalled pages as they raise fewer questions about the information which they contained and which this research could address. They may be dead for a number of reasons but the most likely are firstly that the link was to a website or article which has since been taken down and secondly the link may be dead because the individual posting the link did not provide the proper web address. If the first appears to be the case then a comment about the temporal nature of online information is required - are certain types of site more likely to be deleted or delete content they

host? Does this affect how individuals approach information from these types of website? Unfortunately, unless it is somehow indicated within the comments, or on the page which the dead link returns, it may not be possible to tell at what point the page was deleted or why. If the second is the case then if the correct link is not posted in the replies to the opening post then there is little follow-up which can be made. It could be possible to search for the correct link unless there were conversations happening within the discourse indicating that others had done the same then this would be stepping outside of the discourse which the research is analysing.

Information which was held behind a paywall during the pilot study came in two forms, newspapers and academic websites. The restrictions to access to information behind a paywall are more straightforward than those of the dead links as the information is still available albeit for a fee whereas when a link 'dies' that information could be lost forever. One issue which could only be addressed on a case-by-case basis with information behind paywalls was whether it had always been behind a paywall or whether it had been available for free at the time of initial publication. That some sources only have restricted access was factored in as a new coding node for use in Nvivo for the main study so as to be able to isolate and analyse individuals' reactions to resources which some may not have been able to use.

3.6.2.3 Interpretation of Meta-Data

The upvote system provided more interesting levels of detail, although it too is quite a shallow metric. As discussed previously the threads themselves are arranged according to a score attributed to them which combines votes with time; the more 'upvotes' a thread's opening post receives the more it moves 'into the future' (Springer, 2013) thus pushing them towards the first page of the Subreddit. The more popular a thread is the more likely it is to be at the top of a page, so the more likely it is to be read more times than the other active threads. This mechanic is not just at work on the front page of the Subreddit but within each thread as well. This phenomenon of how the most popular threads become so, and how the voting mechanic keeps them there, was commented upon by Reddit's own blog when the

website tried implementing alternative ways for individuals to sort the pages which they viewed (Munroe, 2009). As Munroe (2009) writes, the replies which are likely to garner the most votes early enough to move them to the top of the pile are often among the first posted on that topic and by virtue of being first and top they are viewed and voted upon the most, as users appear not to venture down into comments significantly far. While the issue with time stamps means that there was no way for this research to corroborate Munroe's finding, there is a trend in the data that comments which were higher placed did often have significantly more votes than those lower in the threads.

While the ranking system does confuse more detailed analysis of the meta-data, it was possible through the understanding of the context established by the previous stage of the analysis process to try to find some pattern or logic to the voting which was consistent with the conceptual framework. The broad trend during the pilot was that threads which linked to more mainstream information sources tended to receive more positive votes for their opening posts, but that within those threads the individual comments which received more votes were often those posting corrections or contradictory sentiments. Contradictory or skeptical responses also seemed to generate positive voting patterns in threads which referenced alternative information sources. Funny responses such as links to comedy memes, or jibes at the expense of other users, also generated positive votes. From the pilot study the use of the voting system, while suffering from some issues regarding its technical implementation which must be taken into account, did appear to be a valid if shallow measure of the value of the contribution the community believes a post represents. It was this understanding of the upvote and ranking system which was taken forward to be developed upon within the main study.

3.6.3 Changes made following Pilot Study

A decision was made, following the completion of the analysis of two of the Subreddits, not to continue with the third as it appeared that all of the lessons with regard to process that could be learned from the pilot gathered through analysis and review of just two sample groups. The two Subreddits which were analysed were r/Environment (Reddit, 2013c) and r/Climate (Reddit, 2013a), the third which was

collected but not analysed was r/Climateskeptics (Reddit, 2013b). As the analysis for the pilot study only comprised data from two of the Subreddits collected the total number of threads analysed was 447. A key reason for this decision was that the difference in size between the two Subreddits which were analysed did not demonstrate any significant differences in outcome or lessons learned with regard to the process that the pilot study sought to test. On the whole the data capture and analysis process designed for this research was sufficient to handle the collection of the data and, while requiring some small changes to cope with the subtleties of the discourse, was adequate for the analytic process as well.

From the lessons learned within the pilot study the following changes and enhancements were made to the data collection and analysis process:

- Additional and more regular back-ups of working data sets were produced due to instability in the analysis programme Nvivo.
- Installation of a richer multi-level process separating threads into six categories based on relevance to climate change focus rather than three in order to reflect the evolution of the discourse better.
- Greater granularity and increased number of distinctions in the classification of sources of information shared within the discourse.
- Greater granularity and increased number of distinctions made when classifying the forms of information shared within the discourse.
- An emergent working conceptualisation of the discourse which expresses its asynchronous nature was developed.
- A working conceptualisation of the meta-data contained within the upvote and ranking system and the context within which they sit was developed.

Taking into account the lessons which were learned during the pilot study the research process was revised from that shown in Figure 3.1 to that shown in Figure 3.5. This revised process illustrates the retention of the original data collection process before the data is categorised into more distinct divisions as outlined in Section 3.6.2.1.1. Each data subset then follows its own path through the

appropriate stages of analysis it required before all of the observations feed into the final research findings at the process's conclusion.

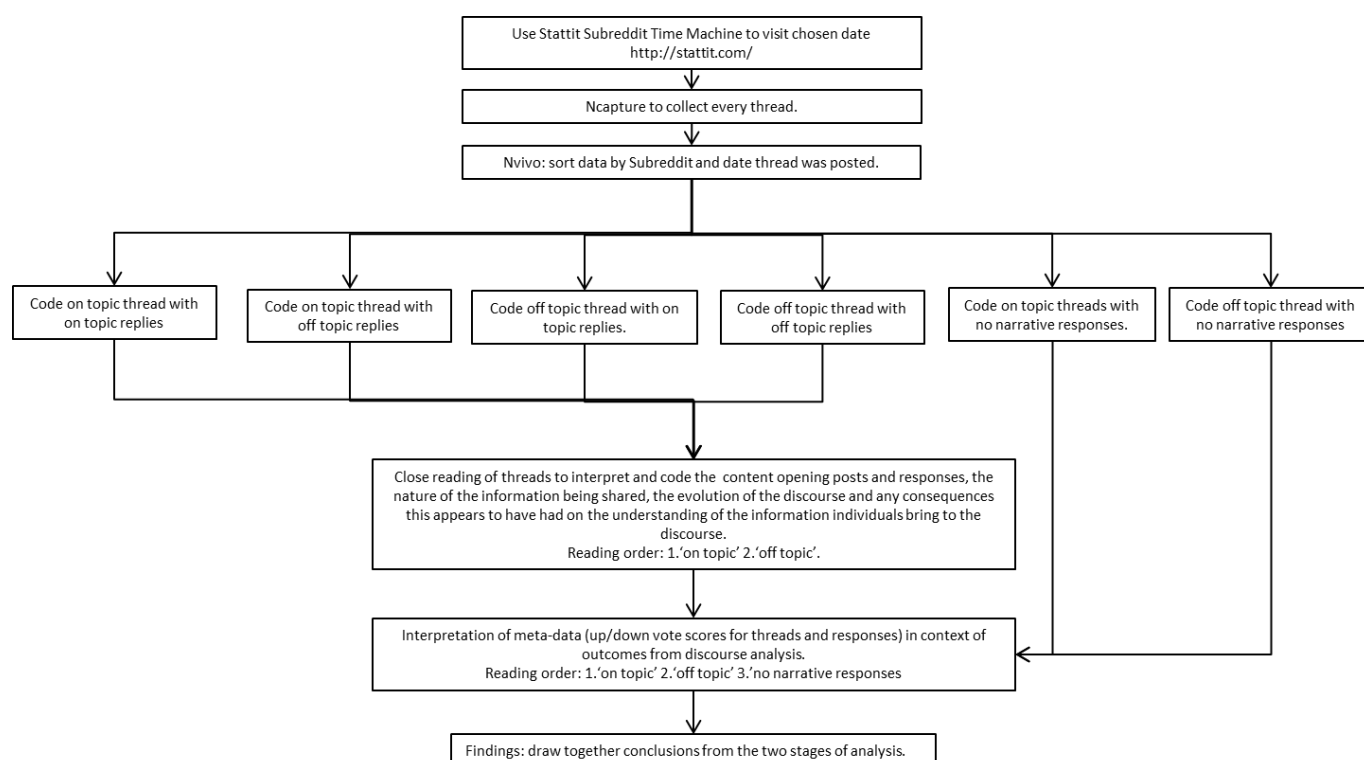


Fig 3.5 Revised Data Collection and Analysis Process

Another change that came before the data could be collected for the main study was that the online search tool used for the data collection in the pilot study was taken offline by its owner. This led to a new data collection process being devised in which the search tool (Deimorz, 2013) was replaced by using a custom search term that would return all the threads started on a single day in the same manner as the previous search tool. However, it was a much more time consuming process. This process required the Epoch/Unix timestamps used to count a universal computer time setting which had to be sourced from an Epoch converter website before being used to construct the custom search term.

The new custom search term took the form of a URL in which the Epoch/Unix timestamp could be replaced to deliver results isolated to a single date. The Epoch/Unix timestamp is a computer timekeeping method which tracks not minutes, hours and days but is a continuous count of seconds which begins January 1st 1970. In the custom search term used for this research the timestamps for the beginning and end of a particular day were sourced using an online Epoch Converter then

substituted into the correct part of the URL. As illustrated below where yyyyyyyyyy is the start of day timestamp, xxxxxxxxxx the end of day timestamp and 'SUBREDDITNAMEHERE' is substituted with the name of the target Subreddit forum.

[http://www.reddit.com/search?q=\(and+timestamp:yyyyyyyyyy..xxxxxxx+reddit:'SUBREDDITNAMEHERE'\)&sort=top&syntax=cloudsearch](http://www.reddit.com/search?q=(and+timestamp:yyyyyyyyyy..xxxxxxx+reddit:'SUBREDDITNAMEHERE')&sort=top&syntax=cloudsearch)

The start and end of each day were always taken as 00:00:01am and 23:59:59pm before their conversion into Epoch numbers and substitution into the URL.

Therefore, for example, the search term for the Environment Subreddit on the date of the critical incident around which the main study data was taken, 27/09/13, reads:

[http://www.reddit.com/search?q=\(and+timestamp:1380240001..1380326399+reddit:'environment'\)&sort=top&syntax=cloudsearch](http://www.reddit.com/search?q=(and+timestamp:1380240001..1380326399+reddit:'environment')&sort=top&syntax=cloudsearch)

Using this method would generate 87 unique URLs each returning a single day from each of the three Subreddits which were initially explored as possible samples for the main study data set. A short test was also carried out using this technique to collect data from some of the pilot study days to ensure that the new technique returned appropriately similar results. The test searches returned identical results to those collected for the pilot study.

3.7 Data Analysis

As Netnographic research in a study such as this one could have the potential to return an overwhelming volume of data, particularly for a study which sought emergent findings based on interpretation of the data, a complementary addition to the method was made. The addition of elements taken from Template Analysis, as advocated by King (2010), as a guiding form of thematic analysis in qualitative research project and seen as a useful method in psychology research where the data can be highly subjective and can require guidance for the researcher to deliver their best conclusions (Braun and Clarke, 2006, Brooks et al., 2011). In this research the template took the form of the working conceptual framework where key themes

in the definition of information and of the individual were used to guide the data analysis.

3.7.1 Explanation of Nodes

The Nvivo coding for the data in this research is based upon a pair of templates which themselves were drawn from reviewing the existing literature. These templates cover conceptual aspects which define Information and the Individual, with particular reference to their existence as understood in the online world. Due to the casual and inconsistent nature of the language of the discussions contained within the data set the specific nodes used to code the data were developed as an emergent property of the research.

3.7.1.1 Information

The information template has four main branches; information as a part of the communication process, information as a resource or commodity, information as a representation of knowledge, and information as data in the environment.

- *Information as part of the communication process* – Manner in which individuals use information within the discourse. These nodes may overlap or duplicate those which refer to the individual.
- *Information as a resource or commodity* – Manner in which information is perceived; primacy of forms, manner in which it is referenced and pieces are regarded by the community.
- *Information as a representation of knowledge* – the form information takes, eg. newspaper, magazine, blog, academic journal article, government documentation etc. Coded as either 'Information – X' for information in the opening post of a thread or 'Information Response – X' for information contained within replies to the opening post and elsewhere in the thread.
- *Information as data in the environment* – unintentional communication, meta-data such as upvotes, nature of message board discussion.

3.7.1.2 The Individual

The template for the individual is based around two key elements; the perceived credibility of the individual and their contributions to the discourse.

- *Perceived credibility* – evidence of self-presentation as having a particular status, eg ‘having working 10 years as...’, the manner in which other members of the community respond to an individual, and the status with which they are regarded.
- *Contribution to discourse* – the role an individual occupies within the community; information provider/rebucker, troll, lurker, someone who raises questions or seeks to provide answers. The type of interactions individuals have within the discourse; questioning information, accepting information, bringing new issues to the debate, attacking another individual, responding with supported or unsupported claims.

3.7.2 Sorting the Data

For the main study, with such a large quantity of data to analyse the collected threads were sorted at several levels. First they were divided by the Subreddit they were collected from and then within these categories they were ordered by the date on which they were originally posted. As the data collected was the entire content of the three Subreddits it was necessary to sort the threads on the basis of their relevance to the critical incident and subject which was the focal point of this research.

Given the outcomes of the pilot study an early decision was made to focus the main study upon the sources of data which would yield the most useful content for analysis. As the data was collected from three separate Subreddits, Environment, Climate and Climate Skeptics, when considering the prioritisation of what data should be analysed the original intent behind the research needed to be taken into

account. As the research was inspired by a desire to understand the nature of the general public's interaction with information online the decision was made to focus the research upon the broadest of the three Subreddits, Environment. Climate was a smaller, more niche discussion among those with a seemingly narrower interest in the issue of climate change and Climate Skeptics was a forum for those who actively rail against what is considered the consensus regarding the issue within the scientific literature. Having made the decision to focus on the Environment Subreddit for the main study this meant that there were now 1415 individual comment threads to be analysed. In order to concentrate fully on the information sharing and discussion with regard to the critical incident the comment threads from this Subreddit were sorted in two further ways.

Firstly, as the mechanics of the website mean that the forum is comprised of many individual conversations which exist of pages of their own rather than as a single continuous stream of discourse, some topics are ignored and receive no responses from other users. The first step in sorting the data was a practical one which involved filtering out all of those threads which received no narrative responses. The distinction that there were no narrative responses matters as the website does include a mechanic in which users can vote with a 'thumbs up' or a 'thumbs down' sign as to whether they responded positively or negatively to a message without having to post a written response. In the Environment Subreddit 871 threads received no narrative responses.

The remaining threads which all featured written responses were then drawn into four groups according to their relevance to the topic of the critical incident. These groups were On & On, in which both the opening post and the resulting discussion were both considered on topic. On & Off, where the opening post was related to the critical incident but the discussion was not. Off & On, when the opening post was not about the critical incident but the conversation became on topic and Off & Off where neither the opening post nor the discussion were on topic with regard to the critical incident. This was determined by having an initial brief review of the content of each thread to decide whether the opening post or the information which it referenced was on topic and the character of the discussion, although not necessarily every

individual post as that could have made the relevance distinctions too granular to provide meaningful findings regarding the pattern of the discourse.

3.8 Summary

Having devised a research design and tested it through the process of a pilot study the methodology for the main study was refined and adapted to take into account the appropriateness of the data to be analysed as well as the suitability of the techniques to be used in capturing and analysing it.

The first major change for the main study from the initial design was the scope was drawn back from a proposed three Subreddits to just Environment (Reddit, 2013c). This was due to the pilot study revealing that the volume and quality of the data that could be sourced from Environment alone was enough to satisfy the issues raised in the aims and objectives of the research. Secondly, Environment was more broadly representative of the type of interaction which the research was intended to focus upon rather than the two more partisan forums which were also collected for the pilot study. As the study was intended to focus upon the views of regular individuals' discussion a particular issue it was inappropriate to select a forum that existed for the discussion and dissemination of one particular point of view.

The second difference between the original design and the one used for the main study was the practical step of data collection. As described in Section 3.6.3, the original process had to be abandoned completely after the third party application which had been used for the pilot study was taken down by its maker (Deimorz, 2013). The new process detailed in 3.6.3 would provide the exact same data although in a much more labour intensive 'manual' manner.

Third there were changes to the analysis which were made following the pilot study which revealed the true complexity of the data which could be sourced from a Subreddit and the value that data had to this study. These changes all included adding extra levels of detail to the various coding levels of the analysis such as the distinction between the relevancy of the threads to the critical incident around which they were sampled and providing more categorisations for the sources of

information. This was important as with so many conversations collected there were levels of detail and subtly that required nuance to accurately represent within the analysis.

Making these key adjustments to the methodology following the informative pilot study the data collected and sorted for the main study would be prepared far more appropriately for a closer reading of the interactions and subtle language games within it.

Chapter Four

Data Analysis

4.1 Introduction

This chapter is a discussion of the analysis of the data from the main study. First, before critically investigating the fine detail of the captured discourse, there is a breakdown of the timeline formed by the data collected. This timeline provides a context in which to situate the contributions of the individuals. The potential to discover higher level patterns also provides an additional degree of insight into the overall discourse surrounding online behaviour around the issues discussed by the forum's user base. Following this analysis of the timeline, there is an analysis of the information which is distributed and discussed by the forum users. Information is examined first, as in order to approach the research questions as confidently as possible regarding the idea that online discourse affects the meaning and validity of information, it is important to understand what information is used by the community and how it is viewed within the discourse. The results obtained from the On & On relevance group are the primary focus of the research but within the data collected there are other degrees of relevance to the critical incident to consider. Those results help to provide context and contrast to the most relevant On & On group as they represent the background noise of the day to day forum discussion as users interact on issues other than significant news events.

Having examined the place of information within the discourse the next section of this chapter is a discussion of the individuals, their actions and the roles which they take in the discourse. The first part of this takes the form of an analysis of the volume and pattern of individuals' posting. By analysing the volume and frequency of the contributions made by individuals' this research sought to contextualise the interactions which took place and observe any higher level patterns occurred that could show influence in a light which cannot be seen by critically examining the body text of individuals' replies. The second part looks at the language used and the behaviour towards information and other individuals within the discourse. As this

study which looked for emergent findings rather than robustly testing a fixed hypothesis this section is led by the text in order to address the objectives. Are there important or recurring behaviours which take place? How do individuals seek to express themselves, influence others and react to the information and opinions which are shared by others? Is there any unusual behaviour which appears unique or especially significant?

4.2 Timeline of the Discourse

In order to better ground the analysis with an understanding of the nature of the forum from which the data was collected, the first stage of the analysis was to examine the frequency with which messages are shared. Due to the way the data was grouped, according to relevance to the critical incidence, this stage of the analysis is divided into two steps, one shows the pattern of overall post frequency and the second illustrates the post frequency of each relevancy grouping.

Table 1, located in appendix 1, shows a breakdown of the Environment Subreddit showing how many posts could be attributed to each of the relevance sorting types on each day of the study. As illustrated in Figure 4.1 there is a clear pattern to the dates upon which new threads were started. The most striking feature of this pattern is that there is a significant drop in the number of new threads started on weekends in comparison to working days. This trend is true of all relevance groups indicating that traffic to the Subreddit as a whole dropped noticeably on weekends. This even occurred following the critical incident which is indicated on the graph by the vertical line at 27/09/13.

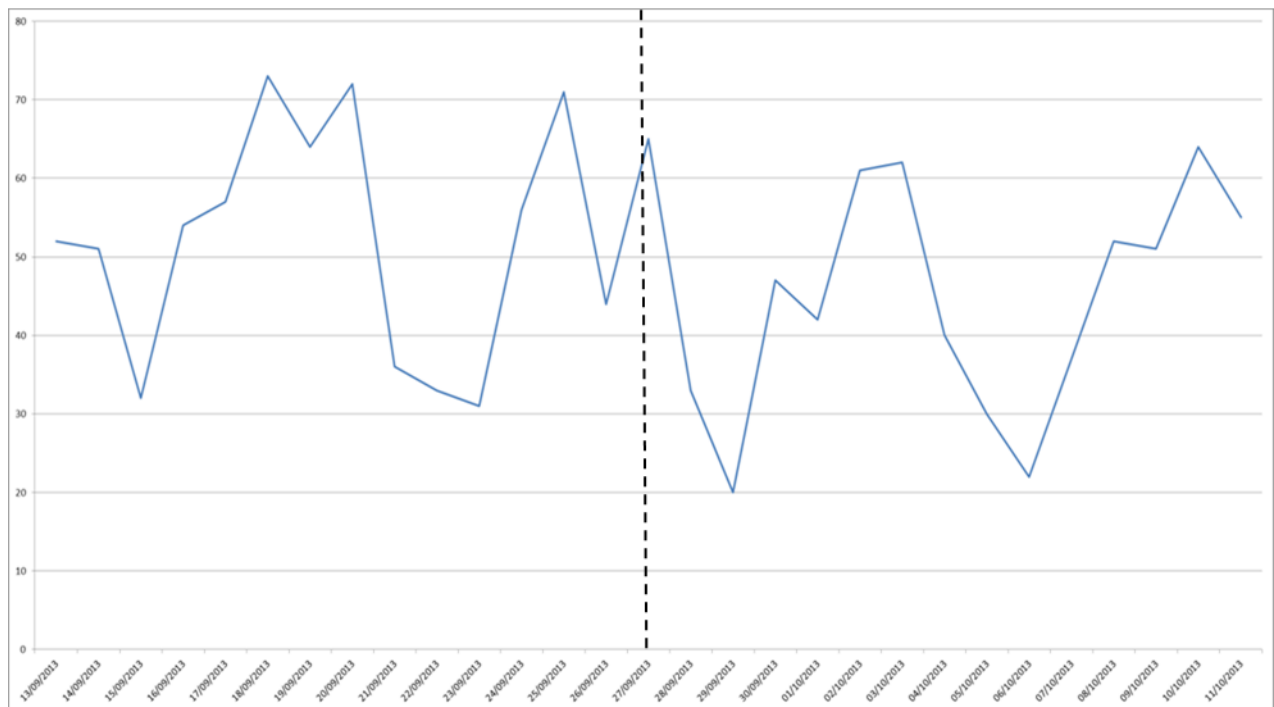


Fig 4.1 Overall Frequency of Posts to Environment Forum

The critical event of the IPCC report publication took place on a Friday, 27 September 2013, which saw a mild spike in On & On postings before the weekend downturn. The following week, during which time much of the press reaction took place, it is notable that not only do On & On threads rise to become the second most frequently posted relevance type but that threads which have no narrative responses fall to a working day low. The suggestion that the reason On & On threads spike during the week following the critical incident is the result of a reaction to the press coverage of the report is hinted at in the quantification of information source types used to open new On & On threads, Figure 4.2, as well as the timing of the threads' opening posts.

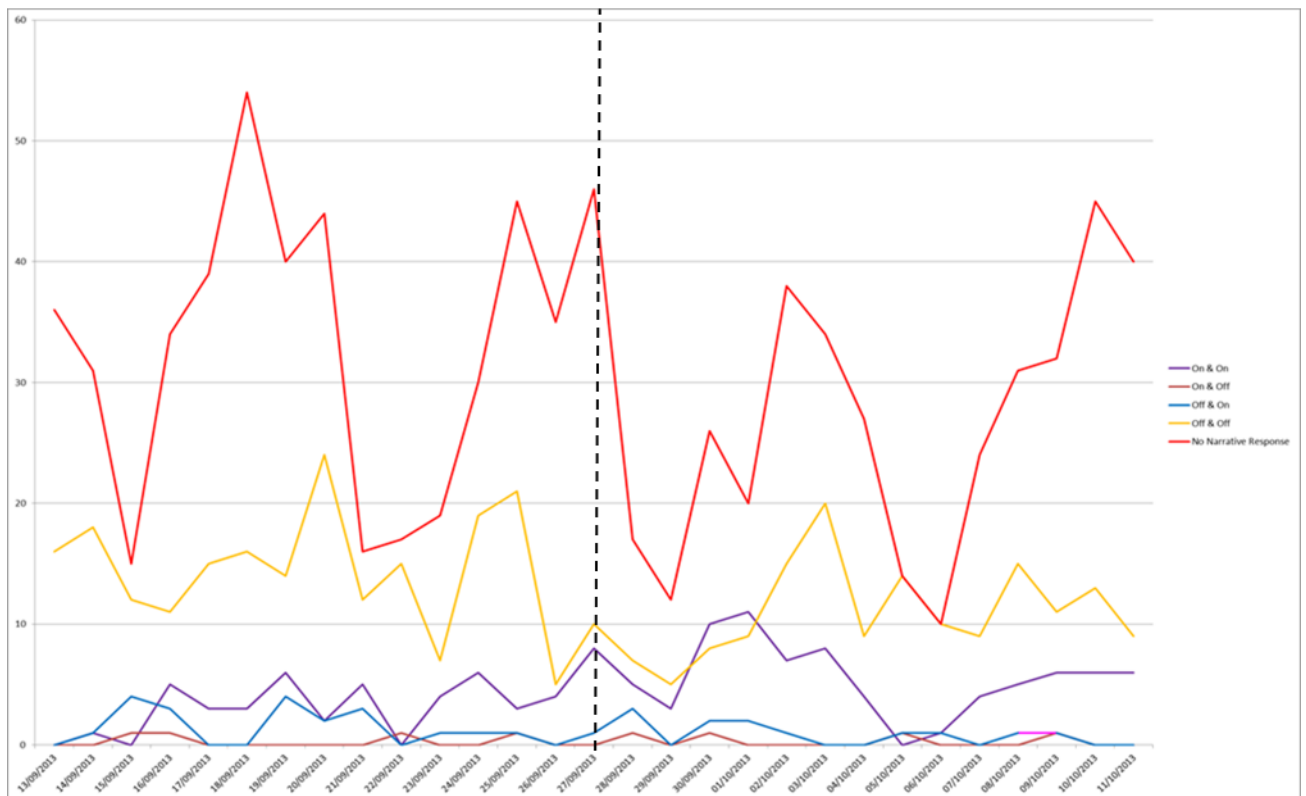


Fig 4.2 Frequency of Posts to Environment Forum sorted by Relevancy Grouping

4.3 Information

Having visualised the structure of the discourse the next step in creating a quantifiable image of what the discourse entailed was to code the information sources shared by the individuals taking part. In classifying the sources shared within the discourse for analysis rather than cataloguing them according to the specific website from which they came, eg the BBC News website, the decision was made to classify them according into more general groups. These classification groups were based upon the branch of the working conceptual framework that defines information as a representation of knowledge. The representation of knowledge is what in the offline world might be considered the physical object for example a book, a newspaper, or a television report. In the context of the online world and this research sources were classified along similar lines, for example an article from the Guardian newspaper was classified as 'News (national newspaper UK)' whereas a link to the climate change skeptic blog Watts Up With That is listed as 'Blog (skeptical)'. This format for classifying the sources allowed for their status as representations of knowledge to be defined on several levels; in the case of the Guardian that it is a news source, a national newspaper and that it is UK based.

While this presents a quantitative illustration of the content of the discourse, the classification of the information sources shared was often subjective, with many online sources not fitting the easy classification that online presentations of offline sources provide. In the case of those sources, which defied straight forward classification of the kind provided by major newspaper websites, a subjective procedure was used. The categorisation was informed by four factors; first the 'About Us' section of the source website if one was present, second the Wikipedia page for the source, third any suggested definition found within the data was considered, and fourth the researcher's subjective interpretation of the source having taken the preceding three steps into consideration. Wikipedia and suggested user definitions were taken into account as a source may not self-report accurately, in which case considering the absence of a definitive directory of the internet the crowd sourced consensus which is reported by Wikipedia could be regarded as an informed best guess. Taking into account the individuals' views, as well as the Wikipedia, entry helped to illustrate the subjective view of the individuals themselves and their own understanding of what type of representation of knowledge a source was and any issues regarding legitimacy which that may or may not provide.

4.3.1 Relevancy Group On & On Topic

Using these subjective qualitative rules as a guide Table 2, see appendix 1, shows a breakdown of all of the sources shared as opening posts in discussion threads classified as On & On from the Environment Subreddit. Fig 4.3 shows that news websites were the most common sources of information used to begin new On & On threads, the most frequent information source types being News (national newspaper UK) and the group labelled as News (alternative news website). The group News (alternative news website) is a broad category which includes non-mainstream online news sources, such as Alternet, CNS, and Truth Out, as opposed to more mainstream online news carrying websites such as the Huffington Post, Yahoo or MSN.

The inference that the posting of new threads is tied to the weekly news cycle could be supported by the fact that news websites, rather than comment pieces, personal blogs, or academic sources are the representations of knowledge which drive the initial posts of new conversations. Although the IPCC report publication forms the critical event at the heart of the data, only two threads from this sample actually began with direct links to the IPCC itself. While the IPCC publishes information directly to the public through its own website, does the lack of threads directly referencing it demonstrate a lack of awareness or difficulty in access to that information? Could it be that the report itself, both in terms of its content and its status as a complex expert representation of knowledge, is seen as requiring the filter of interpretation and demystification which news coverage and comment could be seen as providing? News outlets also have a visibility factor which more traditionally authoritative sources do not have; this could be a reason for their increased use among a user base which does not self-identify as being an expert collective.

As opening posts are presented without editorialising or comment by the users of Environment, as per the moderator's rules for conduct on the forum, it is difficult to read the intention of the individuals who share information. However, the focus on news reports as illustrated in Figure 4.3, would suggest that this is information which is being presented to the community as important and legitimate in a way that less mainstream sources such as blog posts may not be. Outside of sources which would fall under the wider categorisation of news sources, combining newspapers, broadcasters, online news sites and news magazines, the other categories are all similarly represented. This could imply that as far as being notable enough to introduce a new topic to the community, they lack some accepted legitimacy.

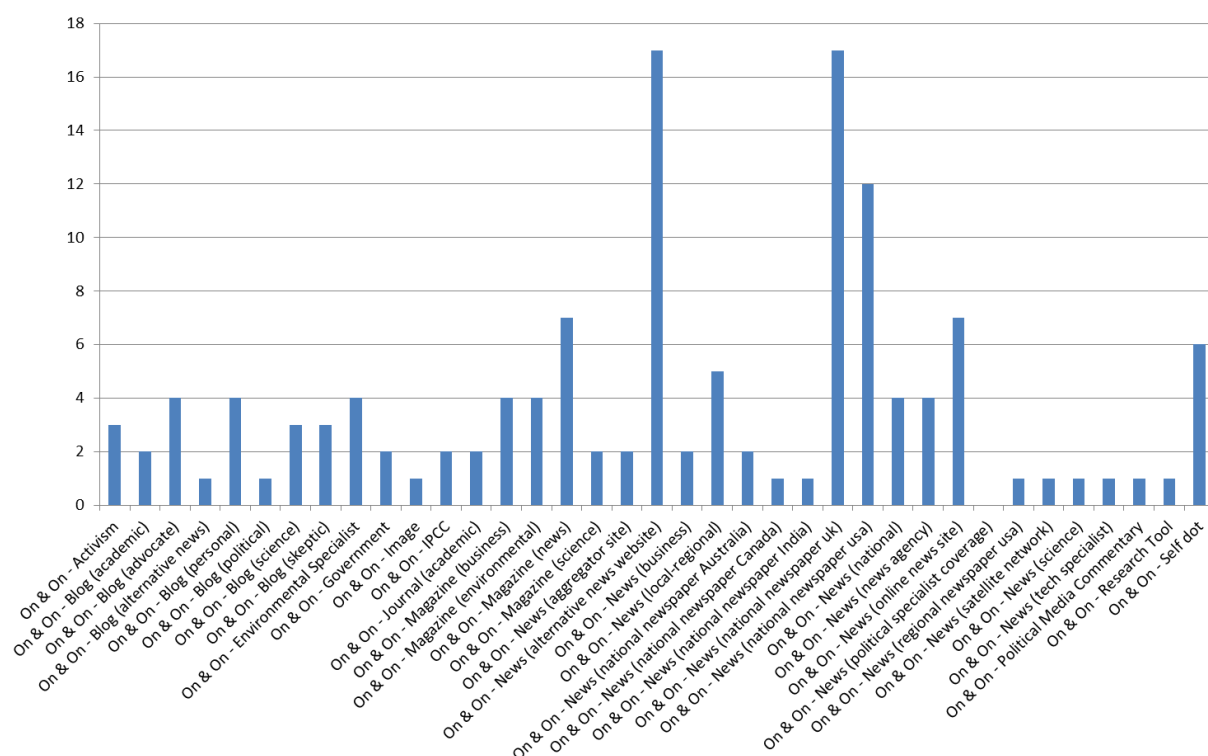


Fig 4.3 Information Source Type shared in Opening Posts. On & On relevancy group

The responses to the predominantly news based opening posts provide a surprising stark contrast. As listed in Table 3, see appendix 1, and illustrated in Figure 4.4 the range of sources seen in individuals' response posts is broader than the opening posts. As well as this larger range, the categories which feature most prominently are radically different. Conventional news sources of the kinds which typify opening posts are significantly less frequent among the responses with the emphasis now lying on blogs, image sharing, and reference material such as Wikipedia and academic sources.

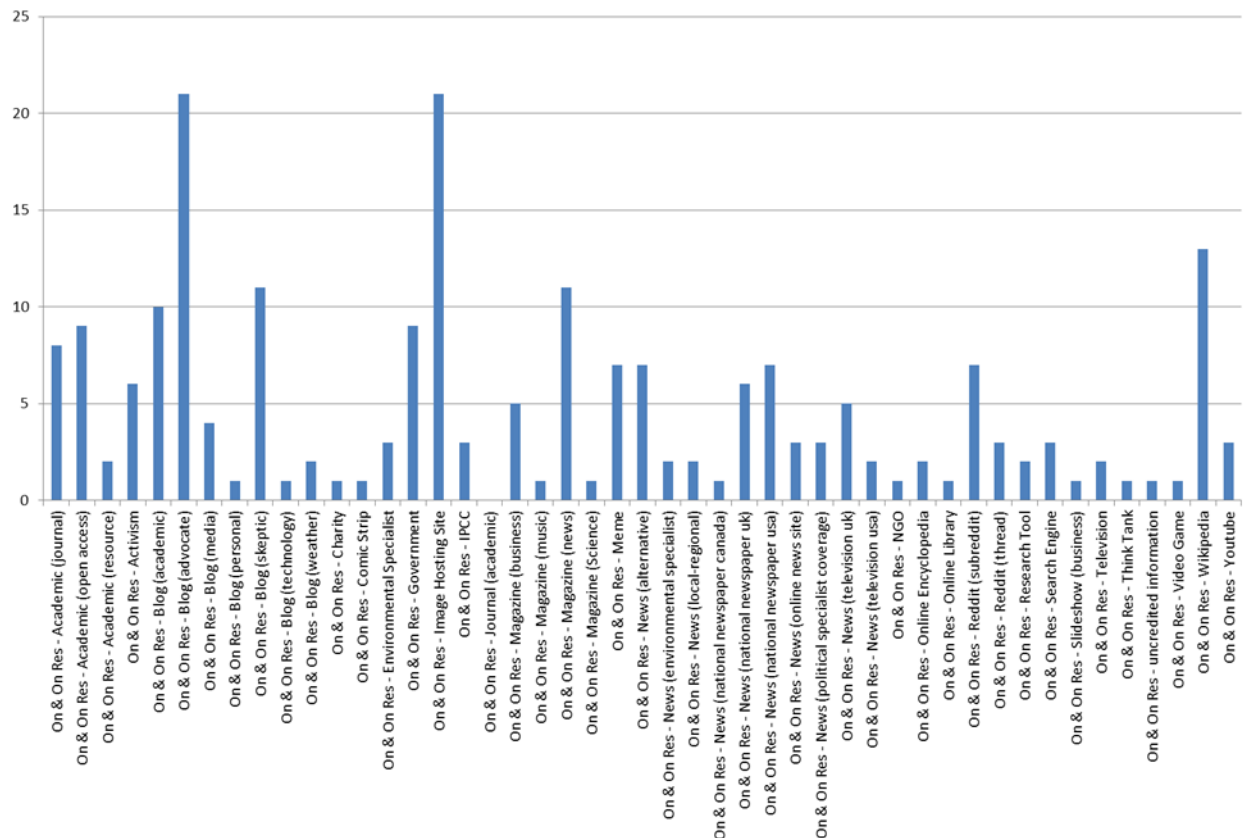


Fig 4.4 Information Source Type shared as a Response or Reply. On & On relevancy group.

There are characteristics of the nature of the forum which could influence this shift in preferred source type, with the opening post having to be presented 'as is' it may make sense to highlight a single authoritative source and then allow the discussion to develop around more comment-oriented representations of knowledge. However, the nature of the forum and online communication is that it is not simply a means of disseminating information but is a framework in which debate is enabled. As will be discussed in greater depth when examining the generative role-taking of individuals within the community, those who were posting the opening posts of these threads are not often the ones who were leading the discussion. This means that interpretation of why someone would share a piece of information must be revised, with the opening post being defined by sharing information and the responses by using information as a part of the communication process. Information in this second definition is considered a more active or fluid node in the discourse.

One of the least subtle ways in which information is used as a tool rather than shared as a commodity in this way is the number of references to Wikipedia within

the responses. These Wikipedia entries are frequently references to logical fallacies or debating terms rather than facts relating to the issue being discussed. As responders are able to comment alongside the information they share it becomes more apparent that this use of information from Wikipedia is as a way to either elevate the individual posting it or to denigrate the individual to whom it is being sent as a form of one-upmanship. The example of Wikipedia being used in this way is interesting but given that evidence exists for information being used in this manner, could it be that some of the other source types have also had their number of references raised in a similar manner? Certainly some of the meme posting appears to have been used in a comparable way; often as a conversation thread is running out of steam or else becoming heated, one individual may post an image to belittle another user and step away from debating the issue which had been their previous focus.

An extension in the working conceptual framework posits the notion that meaning is constructed by the people and is not necessarily inherent in the information itself. Given the overarching research question of this study, considering the manner in which online communication could render information effectively subjective, this is an important consideration. Tied to this is the contextual idea of authorship, within the context of a discourse such as this one the 'author' of a piece of information is not just the original author at the source but the individual who introduces a piece of information to the conversation takes at least partial ownership of that information themselves.

One curious way in which individuals appear to take authorship of a piece of information and present it with a meaning of their own making is that infographics and charts are posted without citing their original context. Simply cut out and hosted on an image hosting website on 21 occasions across six threads, these infographics are used primarily to confirm unsupported statements made by individuals. The empirical connotations of graphs, that they appear to demonstrate hard knowledge, could be the reason for their use in this manner. Indeed, that despite lacking context or citation they are so readily accepted into the discourse with little criticism speaks of an assumed legitimacy of their form or of the perceived credibility of the individual to whom authorship can be attributed.

If the opening post is being characterised as a means to share information that is either interesting, important or worthy of discussion then the sharing of information below the line is much more nuanced. Online discourse is characterised as often being harsh, with individuals able to act in ways they would not in face to face conversation behind the mask of anonymity which the web presents but, while that is true in some cases, the responses are also a space in which a negotiated understanding takes place.

While Wikipedia is referred to as gaining legitimacy due to its crowd sourced nature, in this discourse despite a consensus of 97% within the climate science research community everything is still contested. It is this idea that the concept of man-made climate change is available for contest that fuels a lot of the information shared within the response discourse. Publications from the skeptic community feature in a way they did not previously in the form of blog posts and reports of sceptical public figures in the news media. The prominence of blogs posts and articles from outside the accepted consensus appear to be part of a narrative within the discourse in which mainstream sources are questioned due to an agenda which they are assumed to be pursuing, pushing either scepticism or green policies, whereas the independence of blogs seems to grant them an outsider legitimacy. The idea of questioning authority and the 'official' narrative of the news media and scientific establishment is present, so too is a call to the credibility which academic sources are seen to provide. For only two opening posts citing sources which could be considered academic, and those being blog posts rather than journal publications, there are 29 references to academic texts, blog posts and open access publications in the responses. This is still a relatively low number and is boosted by one individual who shared the same set of sources on multiple occasions. However, it raises questions regarding the idea of information as a resource as well as a representation of knowledge. A blog post may be considered another contribution to the discourse which is seen as open to interpretation, whereas academic sources are treated as if they are correct or incorrect. Either the receiver of the information accepts the meaning which the author and sender intend or they reject it. Is there something about the public perception of what academic sources are and how academic publication works that sees them treating those sources in a more rarefied manner to

the other information they consume? Perhaps access is an issue here as the academic sources which are most frequently linked to, outside of the repeat posting of a single user, are available as open access or on the researchers' blogs.

Interestingly, direct links to the IPCC featured as infrequently among the responses as they had among the opening posts. Coupled with the treatment academic sources appear to receive is there an issue regarding interpretation and complexity here? If information is effectively subjective does this occur not in the discussion itself as users are not directly communicating meaning alongside the original information being discussed? Could it be in the filter of news media and agenda driven blogging, where the detachment of a report's original authors and the narrative which is communicated through users' posts takes place? Is the information literacy of users a bigger concern than the manner in which the users act upon each other within the discourse?

4.3.2 Relevancy Group On & Off Topic

The group in which the opening post is on topic and the conversation strays off topic was the smallest of the relevancy groups consisting of only seven discussions. As such while the information sources used to begin those conversations are similar to those from the above On & On group there are too few of them to draw any significant conclusions about on their own, see Figure 4.5. If there is a pattern to information sources which drive conversation away from the initial thread starters intended subject it could not be determined from this group.

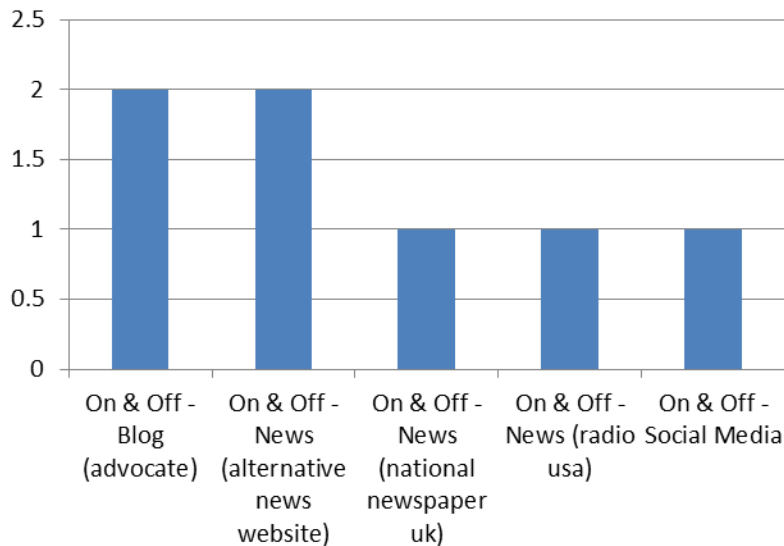


Fig 4.5 Information Source Type shared in Opening Post. On & Off relevancy group.

4.3.3 Relevancy Group Off & On

This was a larger sample than the On & Off group but at only 33 threads it is another small group. The main pattern which distinguishes this group from the On & On topic group is that the most frequent source types are more informal information types, see Figure 4.6. Personal blogs, alternative news websites and local news sites were the three leading source types within the group in contrast to the national and international news organisations which feature more prominently in the On & On group. The pattern that sees local and personal sources, which may be more subjective or niche in what they cover, being the beginning of a discussion unrelated to the critical incident seems logical. The same is true of the progression of a discussion which begins with a local environmental issue such as flooding expanding into the wider issue of climate change and the findings of the report whose publication is the critical incident the research centred upon.

This group also featured two discussions begun with what are categorised as ‘Self dot’ sources. This label comes from the forum’s way of illustrating that an opening post is not a link to an outside source but is based upon content typed directly by the thread starter. Other forms of online social interaction are based more closely upon this sort of content provision but Reddit has its roots in being a news aggregator website where its value is generated through promoting information and sharing with other users. Typically, in a forum such as Environment ‘Self dot’ threads are

requests for information. This could be an explanation as to why they feature proportionally more often in this relevancy group and the following one which also deals with threads which start from an off topic position.

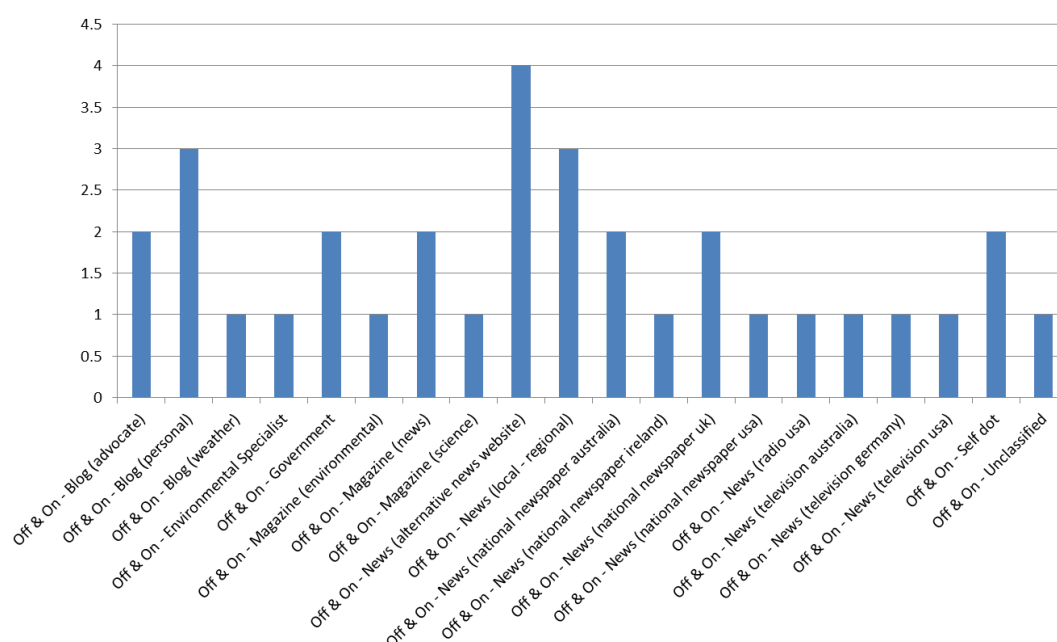


Fig 4.6 Information Source Type shared in Opening Posts. Off & On relevancy group

4.3.4 Relevancy Group Off & Off

As Environment is the most general interest of the three Subreddits collected for this research this group which deals with those threads which begin away from the topic of the critical incident and remain that way in their discussion is actually the largest of the four relevancy groups. It could be that, as a general forum for matters of the environment, this group represents most closely the regular nature of the forum during the periods without notable incidents such as the IPCC report publication or a significant weather event such as a newsworthy storm.

The clearest difference between this major off topic group and the On & On group, as illustrated in Figure 4.7, is that it is alternative online sources which are shared significantly more often than any other representation or type of information.

Regional news sources are the second most prominent information type with UK newspaper websites third. Perhaps due the general discussion nature of the forum and these threads focussing neither on the critical incident of this research or

4.4 Individuals

In order to establish the make-up of the user base within the discourse, all of the contributions by users taking part in the On & On threads from r/Environment were coded. This included their username, how many opening posts they made, how many of their own threads they responded to, how many times they responded to those threads, how many threads started by other users they replied to and how many times they replied to those threads. The usernames were recorded in whatever form the individual themselves use with no additional capitalisation or grammatical corrections. This coding of their actions revealed some very interesting patterns of behaviour which inform the wider analysis of the discourse.

There was a total of 379 individual users coded although not all of them represent real individuals, for example *[deleted]* is a placeholder for an unknown number of individuals whose accounts have been removed. Some of the posts attributed to *[deleted]* retain their content while others have had both the user and their content removed. The username *_FallacyBot_* refers to an artificial user, programmed to post messages beneath those of users whose posts feature logical fallacies. A third user whose identity is more ambiguous is *InactiveUser*, this username may be a placeholder like *[deleted]* for accounts which are inactive but which have not been removed. Alternatively, as a *[deleted]* placeholder already exists there is a chance that it could be a real individual who has chosen an ambiguous user name. Either scenario is difficult to judge from the content of their messages alone.

4.4.1 Contribution

Figure 4.8 is an illustration of the percentage of opening posts posted by individual users. Only 57 of the 379 user accounts identified had started a thread which was considered an On & On thread. This raises issues regarding generative role taking and some individuals being able to act as gatekeepers of information for others. This is especially notable as a single user *Pnewell* contributed the opening post to 36 of

On & On threads, 29% of the total number within this relevancy group. That a single user is able to shape the discourse to such a significant degree is an important factor to note, as the filter through which so much of the information into the discussion passes, what impact does this have on the perceived legitimacy of the sources as well as the perceived credibility of the user *Pnewell* as an individual? Perceived credibility is a product of perceived trustworthiness, perceived expertise and social validation, as a user with such wide reach and so many responses to their threads then *Pnewell* appears to have significant perceived credibility within the community.

Generative role-taking could also have a part to play in the building of a user like *Pnewell's* perceived credibility. They have taken it upon themselves to share information which they think is important or at least worthy of discussion, but in sharing so much information what impact do they have on the kinds of information that the other users see as legitimate? Is the reason that so many threads start with sources which fall under the categories of News (national newspaper UK) or News (national newspaper USA) the result either of threads started by *Pnewell* or users posting similar information as this is what has become the accepted norm, in part because of the prolific sharing of *Pnewell*. Following *Pnewell* the remainder of the top five most prolific thread starters are *anutensil*, *climate_control*, *DonnieS1*, and *fungussa*, who are responsible for 17% between them. The next seven users contributed a combined 14% of new threads.

That such a concentrated group of users is contributing so many of the On & On threads to the forum indicates that, as well as users adopting roles within the community for themselves, the social validation factor in establishing credibility is significant. If a user was discredited would they stop posting so many new threads? Would other users respond to individuals who they did not see as credible? That the largest percentage of threads in the forum overall feature no written responses suggests that new threads deemed uninteresting are ignored. Could a factor in this be the perception of who is contributing the openings to these threads?

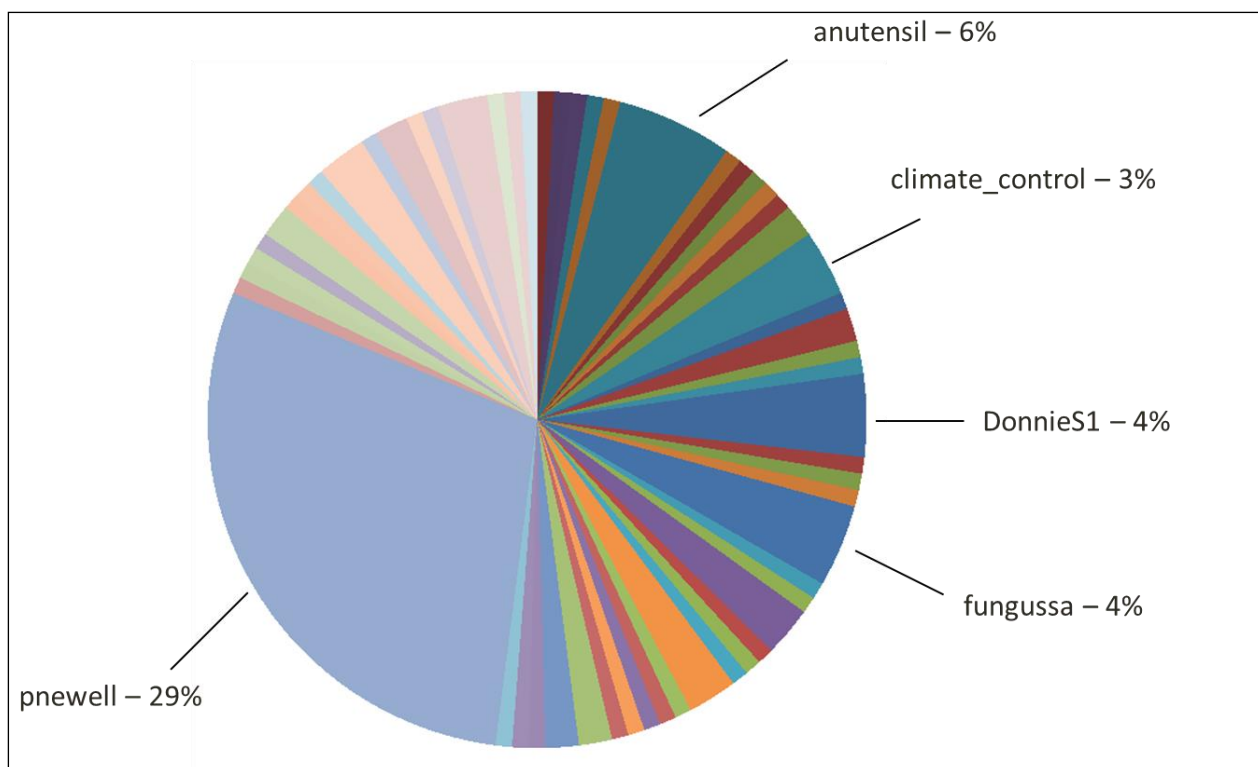


Fig 4.8 User contributions to Opening Posts of On & On Conversation Threads

While a relatively small number of users contribute new threads to the discourse the majority post replies. 329 of 379 accounts (86.8%) posted a response to a thread begun by another user, although, as seen in Figure 4.8 there are signs that, even with such a large group contributing, some users are prolific enough to become noteworthy.

The user *climate_control* has responded to 5% of all threads which have received replies within On & On, Figure 4.9, and is responsible for 13% of all replies within those threads, Figure 4.10. A highly significant contribution when there are almost 1000 replies posted by the 329 contributing users. Behind *climate_control* the users *Kageru* and *archiesteel* replied to 3% of all threads, with *Kageru* being responsible for 3% of all replies and *archiesteel* 7% of all replies. The users *Splenda* and *savethesea* each contributed another 2% of all replies to the discussions.

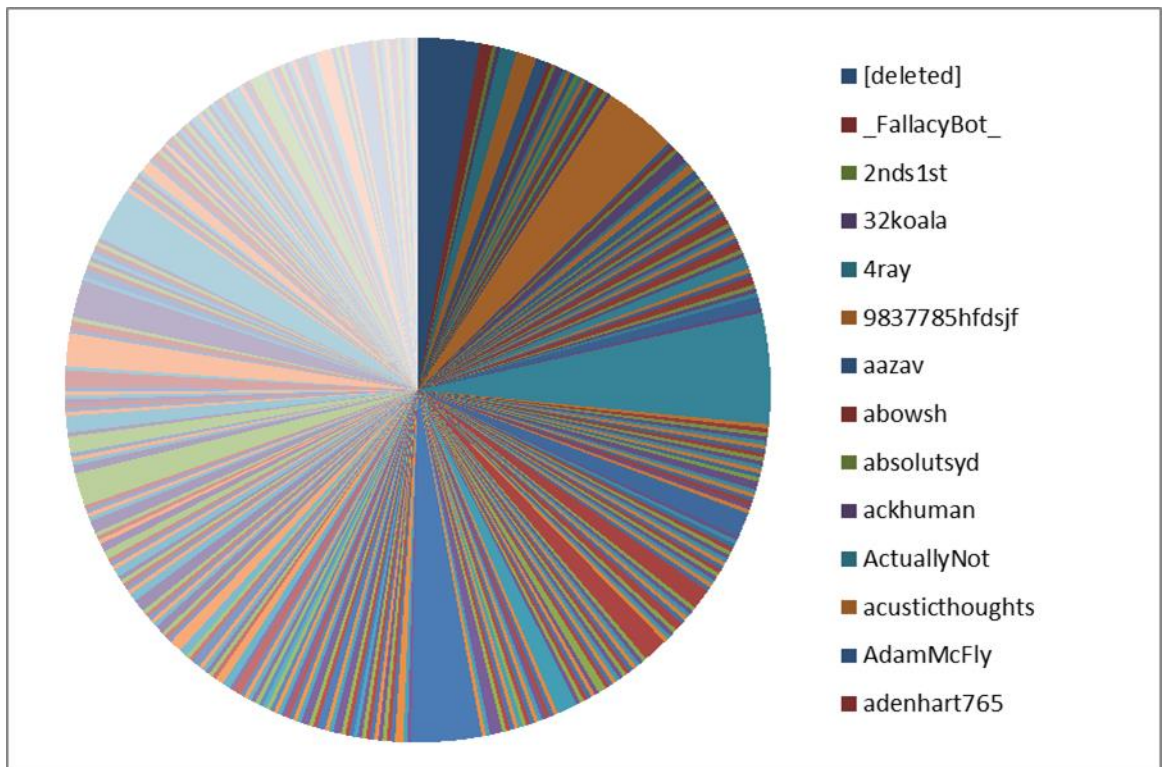


Fig 4.9 User responses to Conversation Threads in On & On Relevancy Group

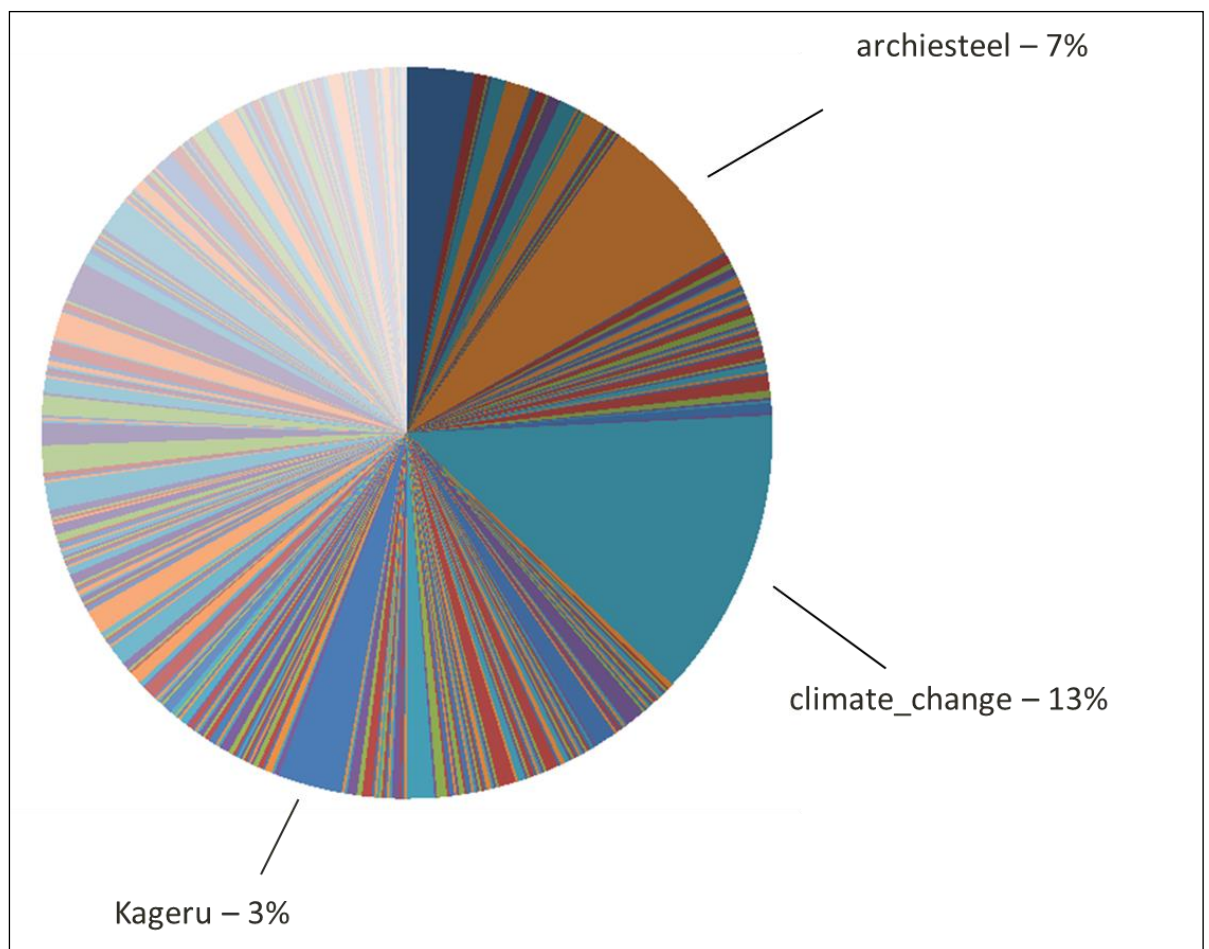


Fig 4.10 User contributions to Conversation Threads in On & On Relevancy Group

4.4.2 Behaviour

In examining the behaviour of these Notable Users several interesting factors and questions arise. First, what do such significant, by volume, contributions really mean? For example, the user *climate_control* is a noted skeptic or even denialist within a community which on the whole accepts the narrative of man-made climate change and the science behind it. Is the volume of responses posted by this user an attempt to barrack opponents during more heated exchanges? If not consciously doing so there is a notable consistency to the types of thread to which the user contributes a repeated dissenting voice. The result of repeating messages seems mixed, although this could be because the message *climate_control* repeats is one which other users have already rejected.

An interesting offshoot of the ‘barracking’ behaviour of some users is the development of ‘duelling pairs’. This is a description which was not found in the literature review undertaken before this research took place but is a pattern of user behaviour in which two, possibly but rarely three, users have long branching discussions with each other that repeat in multiple threads across the data set. This begins to hint at a cyclical process in which the users default positions and understanding of the issue do not appear to alter significantly, although this data set is on too short a timescale to fully explore this possibility. It does however return to the questions of role taking and authorship, the duelling pairs are highly visible and include most of the most prolific users coded in this study. While being a gatekeeper who introduces information to the community is a relatively clear role to identify what is the perception of those who are ‘duelling’? From the comments by other users certainly a user like *climate_control* is regarded as a dissenting voice, perhaps even a troll. There is some evidence that certain sources are dismissed out of hand by other users, several of these are skeptical sources which *climate_control* has shared, does association with a user discredit a source or is it the source itself which is already perceived as illegitimate undermining the perceived credibility of the user?

Figure 4.11 is an interaction typical of those between the 'duelling pairs', is the sample there are indications that the users are familiar with each other and their rhetorical techniques. Also common within these discussions is the manner in which broad points are put aside for relatively minor semantic points such as the difference between 'not sure' and 'don't believe'. Although the examples only offer small illustrations they follow a pattern in which one of the pair will latch onto a post by the other, often not addressing the larger point of the message but instead concentrating on the minutiae of the post. The pattern to this type of posting appears to be that the individual who is responding is seeking not to discredit the message but the messenger. Some of the points made during these 'duels' do directly address the sources which are being shared or referred to but they are often framed within or accompanied by *ad hominem* arguments. The tone of these responses coming repeatedly across the period covered in this study appears to be quite personal with individuals seemingly taking part in an effort to discredit each other in and by extension their viewpoints completely.

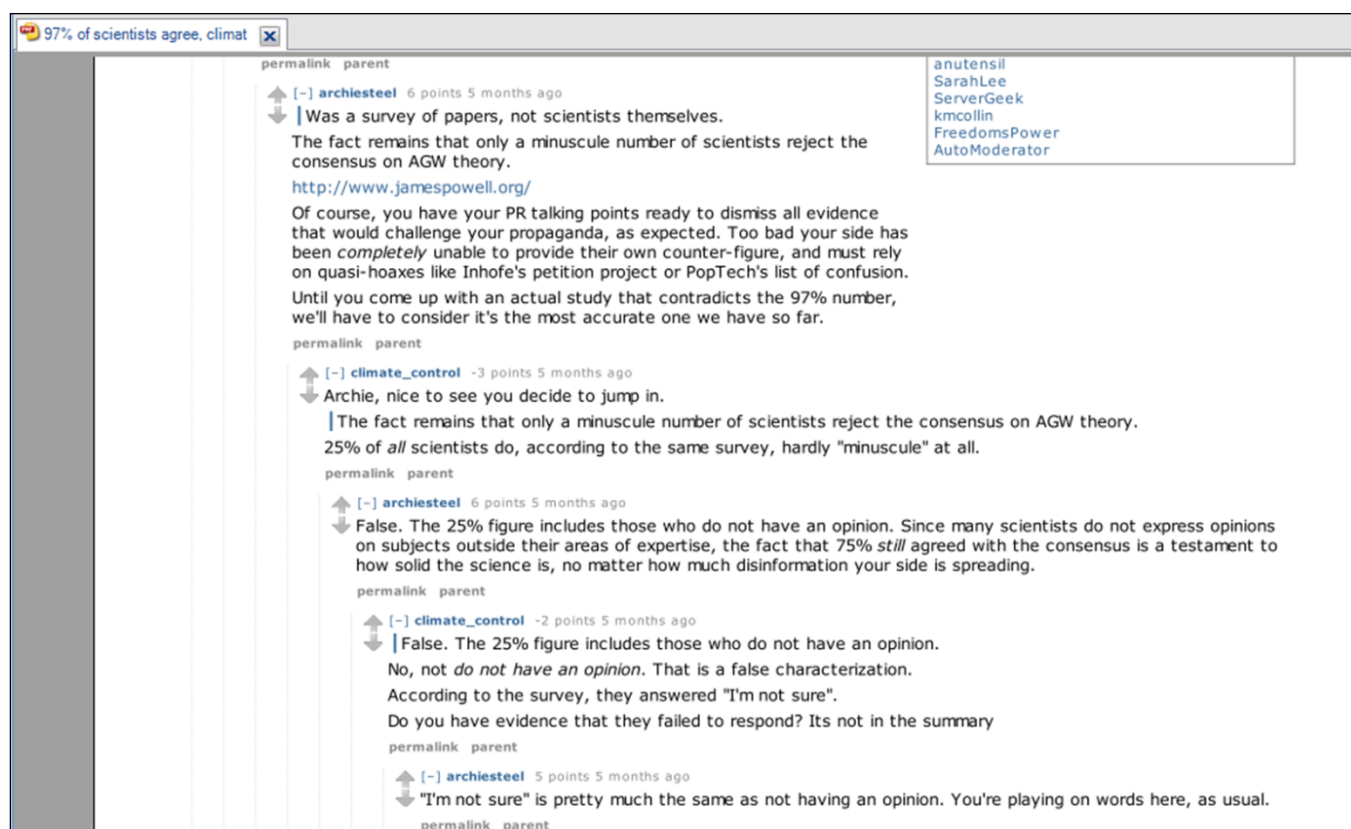


Fig 4.11 Example 1: 97% of scientists agree, climate change is caused by humans. That's unheard of.
30-09-13

In Figure 4.11 there is the beginning of a longer discussion regarding which information sources may be regarded as qualified. This type of argument is also used so that the credibility of the information is always an open option for debate, the difference between saying 'scientists' and 'climate scientists' keeping the opinions of who is allowed to be an expert fluid within the discourse. The main thrust however appears to be to say that one individual does not understand the sources they use, therefore the individual and the sources may lose credibility within the community.

The screenshot shows a Reddit thread in the **environment** subreddit. The main post is by user **nonono2** (5 points, 5 months ago) asking: "But ... 2 % of scientists says that global warming is a hoax, them and koch brothers cannot be wrong?! Can they ?". Below it are replies from **climate_control** and **archisteel**. The replies discuss the credibility of sources and the definition of 'climate scientists'. The right sidebar shows the subreddit's name, subscriber count (115,230), and community guidelines.

environment
 subscribe 115,230 readers
 ~41 users here now
Welcome to environment Reddit!
 This subreddit is for news, issues and information related to the environment.
COMMUNITY GUIDELINES
 Your post may be deleted if your reddit title is editorialized
 Please DON'T use the word "BREAKING" in your title. (*)
 Such posts will be removed and repeat offenders may be banned.
No ALL CAPS Titles/Headings
 Those submissions will be removed.
Keep your comments civil or they will be removed. Personal attacks will not be tolerated. Three warnings and you will be banned.
No Petitions or Fundraisers
 All submissions from Petition sites will be removed. You might try /r/petitions or /r/WhiteHousePetitions.
 Submissions from Kickstarter or Indiegogo fundraisers and other such sites will be removed. You might consider submitting those to /r/kickstarter or /r/Indiegogo.
No Standalone Images, Photos, Meme Gifs, or Videos
 Videos and images should be embedded in an article you submit for context purposes, not submitted on their own.
We have a zero tolerance for SPAM. Be aware of the [Reddit guidelines regarding SPAM](#) and the [wiki on self-promotion on reddit](#).
Also Visit:

nonono2 5 points 5 months ago
 But ... 2 % of scientists says that global warming is a hoax, them and koch brothers cannot be wrong?! Can they ?
 permalink

climate_control -1 points 5 months ago*
 Its 3% of *climate scientists actively publishing in their field*, total of 2 out of 77 people, not 2% of *scientists*.
 permalink parent

archisteel 3 points 5 months ago
 climate scientists actively publishing in their field
 ...or, in other words, those with the most qualified on the subject, and whose appraisal of the theory matters most.
 permalink parent

climate_control 0 points 5 months ago
 Perhaps. There could be others who are not publishing *enough* to satisfy Doran, and others who are most qualified, but don't go by the term "Climate Scientist" and instead something closely related.
 Of course then there is the obvious 6k who didn't bother to answer the survey, since they probably assumed it was an exercise in propaganda.
 permalink parent

archisteel 3 points 5 months ago
 Perhaps
 No, not perhaps. If you want the current state of the science, you ask experts.
 There could be others who are not publishing enough to satisfy Doran, and others who are most qualified, but don't go by the term "Climate Scientist" and instead something closely related.
 Please provide evidence of these, or we'll simply have to assume they don't exist, like those mysterious forces deniers seem to believe are responsible for global warming.
 since they probably assumed it was an exercise in propaganda.
 That's your opinion, and I find it very unlikely since AGW isn't controversial among the vast majority of scientists.
 If disagreement with AGW was frequent and well-supported by evidence, [we'd see more peer-reviewed papers challenging it](#).
 permalink parent

Fig 4.12 Example 2: Because IPCC UNDERSTATES Climate Change threat, Scientists Call for Overhaul. The world's need is for faster, more focused and more targeted research, scientists say, now that certainty of man-made climate change is established. 01-10-13

Figure 4.13 illustrates a direct attack on one of the individuals by another in relation to their credibility, the term sockpuppet referring to a false online identity used to promote an idea online through some form of deception. This often takes the form of a user creating fake accounts alongside their own primary online identity in order to make it appear as if their side of a dispute is more roundly supported than it maybe

actually be. This is likely not the case with this particular account as within the data it is by far the most active account expressing the views that it does, however it is the perceived credibility of the account which is the most important factor to consider. Whether or not the account belongs to a unique individual or someone using multiple identities the idea exists within the community there is an issue with the credibility of the account is significant. As in Figure 4.14, the criticisms of the messages shared by *climate_control* were no longer of the information that they are sharing but dismissive of the individual's contribution as a whole, accusing them of being a troll and refusing to engage with them further. In Example 5 too, a response by the individual identified by others as not credible is dismissed on the grounds of the perceived lack of credibility that the individual now has within the forum.



Fig 4.13 Example 3: Wall Street Journal fails to notice we've seen the hottest decade ever. 02-10-13

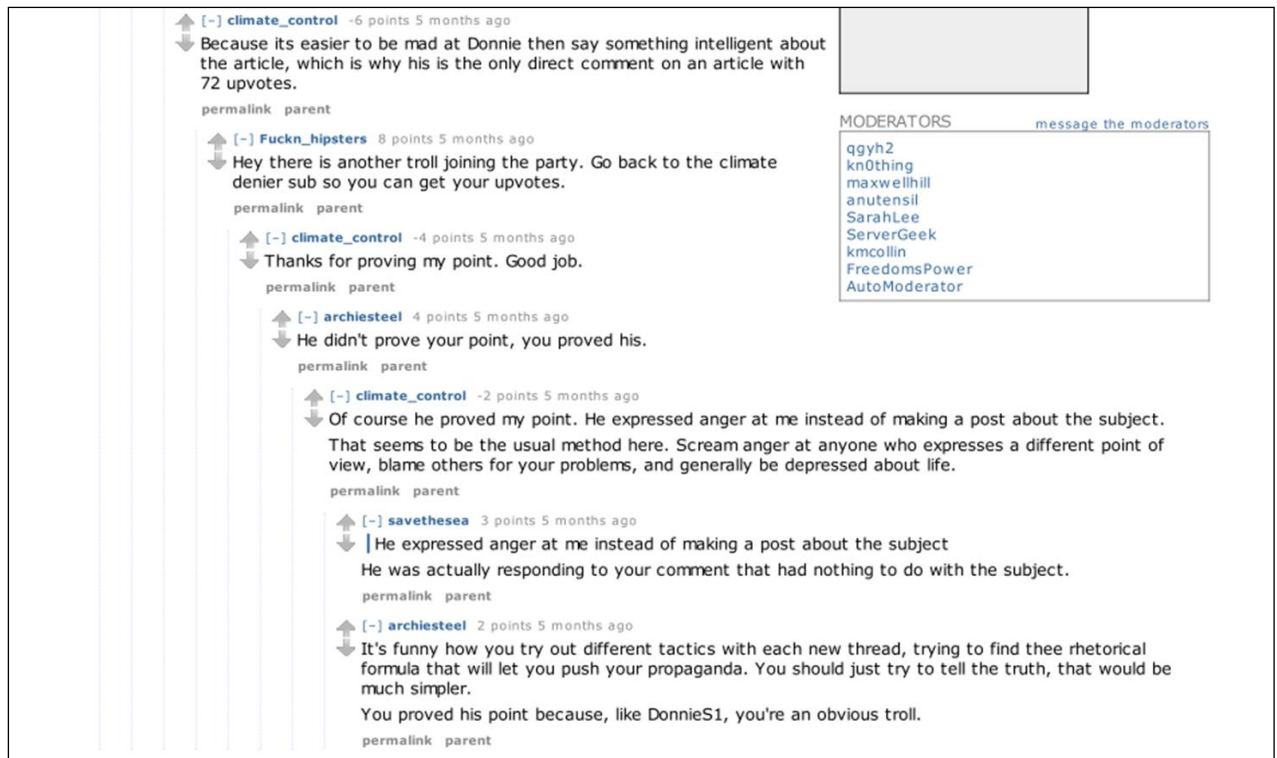


Fig 4.14 Example 4: Calvin & Hobbes Would Call It: Scientific Progress Goes 'Boink' - The govt shutdown has sent many scientists & researchers into a state of paralyzed chaos after an already tough year of sequestration cuts. 03-10-13

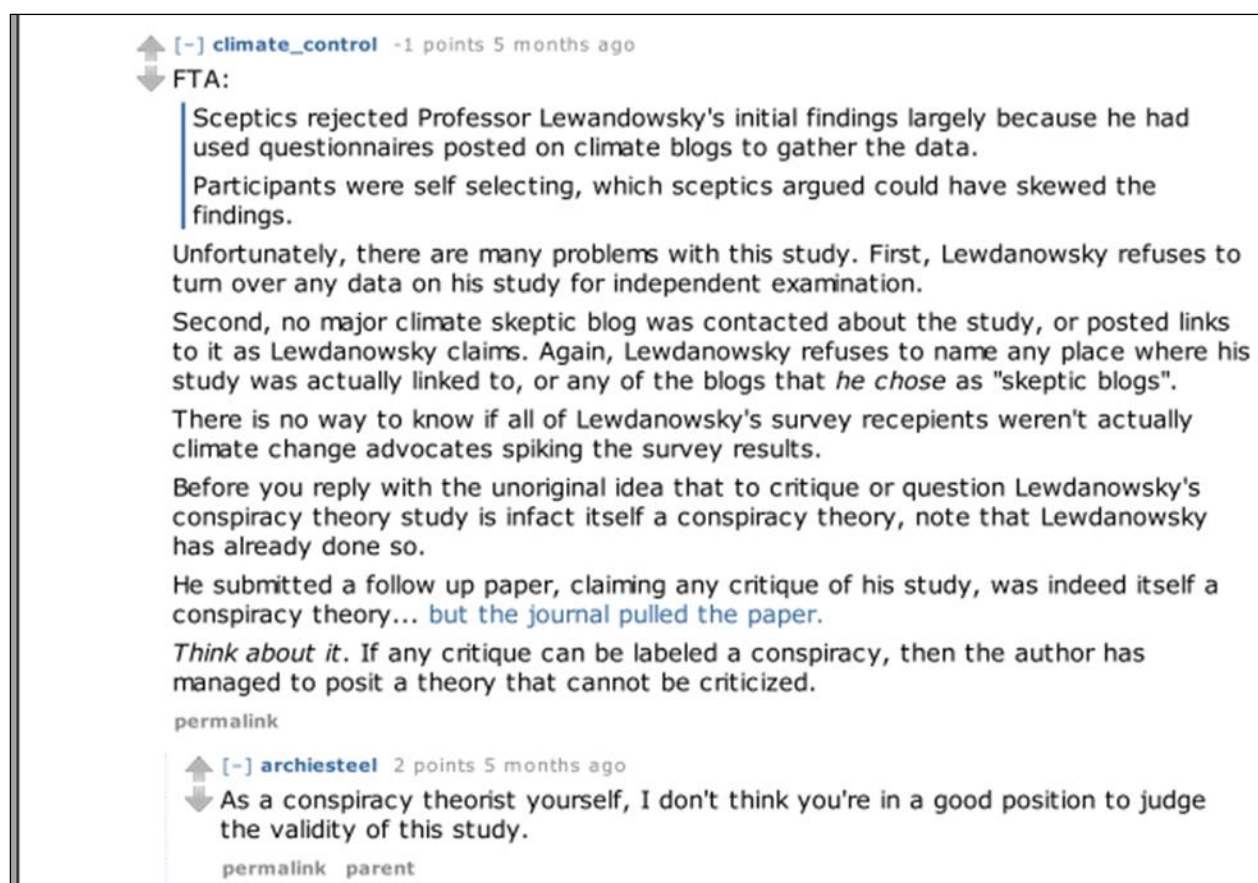


Fig 4.15 Example 5: Climate sceptics more likely to be conspiracy theorists and free market advocates according to study. 3-10-13

Individuals within the discussion appear less likely to endorse other individuals who have heightened credibility than they are to call into question someone as directly as they have with *climate_control*. This could be due to the fact that the opinions expressed by *climate_control* are a minority view on the forum and they are a prolific notable user contributing 13% of replies.

In contrast to these highly prolific Notable Users there are many who only make single contributions to some long and indepth threads. The information shared by these users appears to be accepted readily. Is this because in lacking any perceived credibility or disreputability the sources are taken at face value? One difficulty in tracking these perceptions is often the threads in which a lot of individual contributions tend to be separate from those where a small number of users contest one another with multiple posts. This resulted in there being significant difficulty in tracing the evolution of an argument; it could not be easily followed within one thread but the discourse as a whole must be analysed on a more macro level. At this higher

level a pattern was observable where threads tend to be started by users or information which would be regarded as accepting the reality of man-made climate change with skeptics waiting to attempt to debunk in the responses rather than beginning their own threads. Example 6 is a sample from a thread which contained 106 responses but to which individuals typically only left one or two contributions each. In this case individuals' personal credibility was not questioned from the language used by those contributing, there is a polite engagement with individuals engaging with each other by addressing the points made. This issue then could be that their engagement is too small to build a persona which affects the perceived credibility of themselves and their identity does not affect the credibility of the points they raise. As opposed to the rejection that *climate_control* came to experience, which was built on a rejection of the individual and their behaviour more than the information they were sharing.

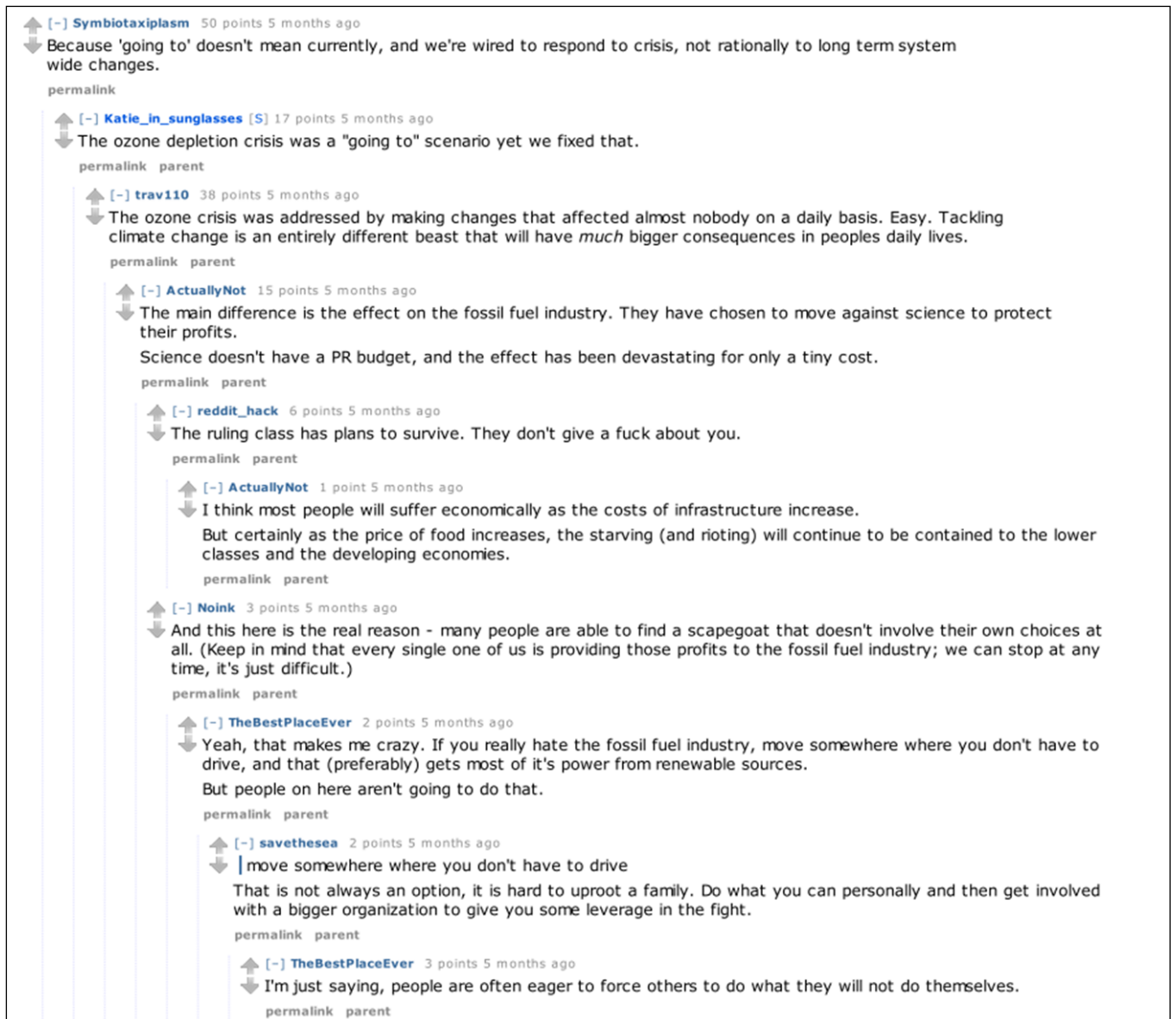


Fig 4.16 Example 6: I don't get it. Climate change is gonna kill billions of people. Why aren't there more people flooding the streets and campaigning for radical change? 26-09-13

This contrast would suggest that very similar information shared by an individual with low credibility within the community will be less likely to be accepted and its meaning and content questioned more closely than if it were by an individual with neutral or good standing. In Figure 4.17 a story from the usually well regarded BBC is rejected as it is shared by the low credibility individual *climate_control*. Although the links shared by the notable user *pnewell* in the discussion below link to images of out of context graphs with no labelling as to where they originally came from and this is unquestioned even by someone that they are debating at the time. *Pnewell* could be seen as having significant credibility and this may be a reason why their posting of

questionable information is allowed to stand. This credibility could be inferred from the manner in which the community has accepted the role which they, *pnewell*, has taken for themselves as a gatekeeper of information. In the conceptual framework the two main branches by which individuals are defined are their perceived credibility and their contribution to the discourse. One aspect of their contribution in the framework is user type, another is generative role-taking, *pnewell* through starting such a large percentage of threads and sharing so much information in their opening posts has assumed the role of a gatekeeper of information because they have started so many threads without being rejected. If an individual adopts a role such as being the person to bring information to the community and the community does not reject the information then there is credibility added to both the individual and the information that they share. This also seems to result in future pieces of information being received uncritically regardless of what they may be. If an individual is able to share information without critical appraisal of others then does that mean that they claim a proxy-authorship of the meaning which that information has within the community?

1 The Climate Change Denial Machine Is Going Up to 11. Deniers claim
 3 'pause' unexplained, but that's like seeing a corpse with a bullet
 2 wound to the head and saying "Except for the bullet wound to the
 head you cannot come up with a convincing explanation why this
 person is dead." (slate.com)
 submitted 5 months ago by pnewell
 33 comments share

all 33 comments

sorted by: **best** ▼

↑ [-] [climate_control](#) -1 points 5 months ago
 ↓ BBC: Global warming pause 'central' to IPCC climate report
 Climate is not a murder case. Climate is not medicine. All of these analogies are attempts at avoiding the topic.
 permalink

↑ [-] [pnewell](#) [S] 4 points 5 months ago
 ↓ Let's see you avoid this topic- your pause is imaginary.
 permalink parent

↑ [-] [climate_control](#) -2 points 5 months ago
 ↓ I'm not growing. I haven't been growing for about 17 years. If you want to make it look like I'm growing, push back the chart to when I was 5 years old, and draw a line to the present. You get an upward trend that suggests I'm still growing.
 That's what /u/pnewell's data is doing. Even the IPCC has acknowledged the pause of warming in the last 17 years.
 permalink parent

↑ [-] [pnewell](#) [S] 4 points 5 months ago
 ↓ Yeah, that or you don't understand or are deliberately ignoring the difference between short term variation and a long term trend.
 permalink parent

↑ [-] [climate_control](#) -1 points 5 months ago
 ↓ The earth is billions of years old. They're both short term trends.
 permalink parent

↑ [-] [pnewell](#) [S] 3 points 5 months ago
 ↓ Lol. Yes, the Earth has been cooling since the Big Bang. But on a scale relevant to human experience and ability to adapt, it's pretty clear action is warranted.
 Unless you think it's cool to displace millions of coastal residents.
 permalink parent

↑ [-] [climate_control](#) -3 points 5 months ago
 ↓ Lol. Yes, the Earth has been cooling since the Big Bang.
 My astrophysics isn't great, but I'm pretty sure the earth as an entity hasn't existed for that long.
 But on a scale relevant to human experience and ability to adapt, it's pretty clear action is warranted.

Fig 4.17 Example 7: The Climate Change Denial Machine Is Going Up to 11. Deniers claim 'pause' unexplained, but that's like seeing a corpse with a bullet wound to the head and saying "Except for the bullet wound to the head you cannot come up with a convincing explanation why this person is dead."

27-09-13

This believer-skeptic divide could be another contribution to the understanding of why the information in responses is characterised so much by blogs, other representations of knowledge not traditionally regarded as mainstream.

General user behaviours which can be patterned at this level as well show that there is a handful of recurring discussion types within the forum. Either threads are characterised by a lot of users posting only once or twice or by a couple of users posting a large number of times; rarely among the longer threads is there much middle ground between the two.

Shorter threads tend to be defined as either a single user in conversation with the thread starter or several individual messages which do not engage with each other. These individual messages act more as a comment on the information on the opening post than an engagement with other users. Figure 4.18 is typical of these kinds of short engagements. Individuals presenting acknowledgements rather than critical engagements with the information with which they are provided. In these cases the information appears to be accepted and its meaning taken at face value. This could be a consequence of the forum not allowing individuals to alter the headlines of any articles that they share as the integrity of the information is kept apart from the effect certain individuals may have upon it.



Fig 4.18 Example 8: 6 Scary Conclusions in the UN's New Climate Report. 27-09-13

Figure 4.19 is an example of a rejection of one of these small response discussions in which an opposing view is shared simply as a link presented without comment. However, as the individual is a notable individual, *DonnieS1*, the character of the information and lack of need for a comment is likely known to forum regulars. The URL for the link also contains enough detail for readers to know whether they will engage with it critically or reject it as well. The role taken by this individual is less antagonistic than that taken by others who appear to share similar opinions and the information they share tends to be from sources with which others are more likely to engage with than those shared by some of the skeptic accounts. In referring to the possible evolution of the conceptual framework then new branches and sub-branches not just regarding the roles taken or the type of user someone may be but regarding whether or not their actions are in good faith are a possible requirement. That someone can be well thought of but still consistently disagreed with.



Fig 4.19 Example 9: New finding shows climate change can happen in a geological instant. 07-10-13

4.4.3 Role-taking

When taking into account the factors which contributed to the working conceptual framework regarding the make-up of an individual one factor regarding the manner in which individuals present themselves is Generative Role-taking. This is the process through which, unconsciously, individuals assume positions within the social group and become defined by these positions. As discussed above the size of individuals'

contributions gives some indication of the roles which some have adopted but while some roles such as gatekeepers might be.

The most clearly identifiable instances of role-taking are those of the notable users whose contributions are more readily categorised due to the size and prominence of their presence. Although none of the notable individuals fully embody any of the archetypes put forward in the existing literature they do appear to occupy quite well defined spaces in relation to one another.

The individual *Climate_control* as discussed above could be labelled as a troll, a flamer or a contrarian within the discussion. These labels are all contested and given the nature of the discourse analysed for this research the label of troll feels inappropriate. This is because, while the term has come to mean a broad spectrum of things from nuisance to dissenting voice and even a sender of criminally abusive messages, its classic definition assigns a degree of trouble-making and malice which is not present in this individuals' contribution. However, the role of a persistent dissenting voice which constantly seeks to undermine other users and their information would be an accurate one to ascribe to *climate_control*, so contrarian seems the most appropriate label. Flamer would apply as well but in the context of this discourse 'flaming' is a method of posting messages or the character of the messages posted but does not position the individual in relation to their peers. Other users can and do 'flame' from the other side of the climate change debate, as seen above in phenomenon of the duelling pairs.

DonnieS1 is another of the notable users who would fit within the contrarian role. Although their method of writing messages lacks the persistence in pursuing an argument for the extended thread lengths *climate_control* did within the discourse. This contrarian role is one which seems to have an interesting effect as not only do these individuals seek to counter information regarding climate change, particularly that which presents evidence or arguments in support of man-made climate change, but they also challenge the credibility of other individuals.

As seen in the discussion regarding the volume of contribution made by some individuals, looking at the volume of contributions as well as taking into account the mechanisms by which the forum works, that they are serving as *de facto* gatekeepers of information. This role seems to have evolved to a point where these gatekeepers possess authority as well as credibility. Given that the types of sources they share are not necessarily what might be considered the most rigorously researched and authoritative in their own right the credibility and faith placed in the sources seems to stem not from the source but from the individual sharing them. The individual gatekeeper has become considered as a reliable source of or filter for information. Notable User *Pnewell* is the clearest example of this role as the individual who makes the largest contribution to new threads and whose information goes comparatively uncontested by other individuals who comment upon it.

With 379 individuals taking part in the discussions during the period being researched many make very small contributions, some as little as a single message or question. As such a lot of these individuals fall into passive categories, if not full time 'lurkers', they seemingly spend more time looking and reading than commenting and contributing. This group's most interesting aspect is in seeing how the community responds to information which is shared and the individuals who are more active in their commenting behaviour. In providing a collective response to the information shared and who is sharing it, there do appear to be individuals who are more trusted than others. While on an instance by instance basis this could be due to the quality of a particular piece of information, over time this builds into a more substantive approval in which even infrequently commenting individuals appear to highlight some of the more notable users and pass comment on the overall quality of their information.

These elements of social validation and authority or trustee status seem to indicate that the ideas of perceived credibility taken from the existing academic literature apply well to the manner in which this community functions. These however are roles which individuals seem to, deliberately or not, establish for themselves by keeping character in particular ways as they make their contributions.

4.5 Summary

The key theme which emerged from the analysis regarding information is that the type of information which is seen as valuable when beginning a conversation thread appears to be different in character to the information which is then used during the course of the discussion. From this reading of the data it appears that credibility quite heavily relies on the branch of the conceptual framework upon which information is defined as a representation of knowledge. Is it that certain representations are viewed as inherently more credible than others? The use of information as a commodity, resource or currency also appears to weigh quite heavily within this forum as an individual's personal credibility is tied closely to the information that they share. There are also games of one-upmanship amongst notable antagonist individuals in which information is used as a tool to browbeat opponents, often with little deep reference to the content of the information that is being shared. The idea that one individual has information is seen as a symbolic of their self-presentation as credible source themselves.

This leaves to be answered questions regarding the power and influence individuals may hold over one another. While there does not appear to be much direct referencing of one user by another how does the repetition of messages affect the character of the discourse?

The following chapter will discuss this and revisit the relevant literature in the light of these questions regarding behaviour. The working model has provided a guide to the analysis but in engaging with the data it is apparent that certain branches are more relevant than others. While it may not mean that branches need removing completely a rebalancing of the model is one feature which is important in addressing and understanding the potential answer to the overarching research question for this study.

With regard to the manner in which the perceived credibility of a user affects the perceived credibility of the information they share there is work to be done exploring the relationship a user has as a proxy 'author' of a piece of information they

contribute to the discourse which could prove enlightening. This could be the potential breakdown between creator and consumer which has been a concern of this research since its original objectives were written.

The definition of information and the role of individuals in legitimising it as fact or falsehood is one which needs very serious consideration – this is distinction between one and the other appears to be much less distinct than originally thought. The fluidity of social validation and crowd sourced legitimacy raise the possibility of having to remodel the working framework on information into something which represents how much less rigid sources are when viewed from the individual's point of view.

Chapter Five

Discussion

5.1 Introduction

This chapter is a discussion of the outcomes of the data analysis from the preceding chapter, a look at the key themes raised in the analysis and an exploration of the consequences of these themes for information and individuals who interact with it. First this chapter will review the key themes of the analysis highlighting those which were of most relevant to the themes of this research. Then there is a critical re-examining of these themes through the contextual lens of first the individual and then information. The final section of this chapter revisits the working conceptual framework which formed the thematic template which guided the data analysis. This revisiting sees the framework reviewed for its relevance and adapted in the wake of the analysis so that it may better inform conclusions as to how to define the interactions within the discourse and any consequences which may be interpreted from within it. The review ends with an attempt to define 'unknowledge' through the production of a unified framework combining the elements from the working conceptualisations of the individual and information, which might best inform and produce an illustration of this concept.

The key themes as identified in the analysis of the data were distilled into the following issues:

- The importance of the personal credibility of an individual and the manner in which it is constructed.
- Information is regarded as a representation of knowledge. Information within the context of this data is defined as being understood by the individuals as being a singular definition rather than quite as nuanced as the multifaceted conceptualisation used in the development of the conceptual framework.

- An extension of the above theme is the extent to which certain types of information are viewed as being of more value and trustworthiness simply by virtue of what kind of representation of knowledge the piece of information is.
- The use of information as a commodity, resource or currency. The ability to possess, share and engage with pieces of external information is a source of influence within the community.
- Paired with the preceding theme an individual's personal credibility is tied closely to the information that they share. The idea that one individual has information is seen as a symbolic of their self-presentation as credible source themselves and the perceived credibility of that information is part of a feedback loop which reinforces the perception of an individual.
- Proxy 'author' of a piece of information they contribute. A breakdown between creator and consumer binary
- Definition of information and the role of individuals in legitimising it as fact or falsehood – distinction between one and the other appears to be much less distinct than originally thought.
- Finally, the beyond the perceived credibility of individuals and information being paired through the validation from the other individuals within the discourse there is the question of how repeated messages come to influence this validation. Are messages which are repeated perceived as more conventional because of the reinforcement through repetition creating an impression of consensus.
- This leads to questions regarding the fluidity of social validation and crowd sourced legitimacy when the influences on the community can be so diverse and imperceptible.

Before addressing the issues regarding information and the consequences that online discourse of this sort can have upon its understanding and use the first section of this chapter addresses the individual discussing their role within the discourse and what the effect of this may be for their place within the discourse. In

addressing the two central pillars of the study in this order the position and understanding can be better understood having first discussed the actors who consume, distribute and debate its meaning and place in their discourse.

5.2 Individual

The discussion of how the individual is defined and the place they hold within the discourse analysed in the previous chapter focusses upon four important themes from which a more holistic understanding may be drawn. Firstly, the issue of credibility and trustworthiness and how that status is gained, maintained and what it means within the discourse. Second the consequence of the identity of an individual who shares information and how their status within the community affects their sharing ability. Third the responses and interactions with other individuals and forth how the nature of an online space alters the dynamics an individual can influence and the roles they are able to adopt.

5.2.1 Credibility and Trustworthiness

One issue which was a key aspect in defining the place of the individual within the discourse and in conceptualising them as an actor was that of credibility. Credibility was one of the initial branches of the working conceptual framework with three branches taken from the literature and used in creating that conceptualisation of what perceived credibility would be built from. Social Validation, Profiles and Authority/Trustee status were the elements which were used in the working conceptual framework. In this section there will be discussion of how the themes raised within the data complement or contradict these elements and the manner in which the conceptualisation of credibility has evolved and what this could mean for the definition of the individual and their role within the unknowledge economy.

The role of social validation, as discussed in the literature review, is seen as an important component of developing credibility for an individual. It is through the perceptions of others that an individual becomes more influential within the discourse. However, this study finds that this community sourced social validation is perhaps more closely tied to the self-presentation and social role-taking of an individual. Guadagno et al. (2013) found that social validation affected compliance

but not likeability. Role-taking in the context of this research suggests that distinction is not quite so clear, but ideas of authority, credibility and status are all key to an individual's influence on the discourse. As discussed below, the role occupied by a notable individual within the discourse is not necessarily a result of their status being raised through the validation of the community but rather the perception of others is driven by the role taken and presented by the notable individual. For example, in the Analysis there is evidence that one of the notable individuals is responsible for a significant percentage of new topics discussed upon the forum. While the data set does not include this individual's contributions dated back to their first joining the community the manner in which they share information and the response to these contributions suggests that the individual's posting style is not dependent on the responses they received from other users.

The ACRL Framework for Information Literacy for Higher Education (ACRL, 2016) highlights as its first frame that authority is constructed and contextual, that information is representative of its creators own credibility and ability, and that authority is constructed by communities. As seen in the previous chapter, and discussed below, these threads on the roots of authority have been examined within this research. Of particular interest is the idea that there are different forms of authority or credibility. These span from subject specific expertise, to position within the community and personal experience. Credibility, or the perception of it in the eyes of others, was one of the defining factors of the individuals' experience within the discourse examined in this research. Of note is that while the subject around which the discourse was built was one which would appear to require a great deal of subject specific expertise to generate credibility, it was the position of the individual within the community which drove perceptions of their credibility.

In adapting and applying persuasion theory to self-presentation and impression management on Facebook (Rosenberg and Egbert, 2011) identify three self-presentation strategies which could be used online. Self-monitoring, how sensitive they are to social cues and the impressions of others, Machiavellianism, how they calculatingly seek to position themselves and gain an advantage in influencing others, and affinity-seeking, an inherent need to be accepted and included. These behaviours when considered alongside the key themes of the analysis of this

research and the type of contributions made by notable individuals can be seen as directing and shaping the perceptions the community has of them. The interconnectedness between an individuals' self-presentation and the social validation of their position and credibility makes it difficult to fully isolate the discussion of one from another but the behaviour exhibited by the notable individuals certainly aligns with those described by Rosenberg and Egbert.

One key difficulty in ascribing these strategies to individuals is that intent is not always clear from single or a small sample of actions. This is why it is the notable individuals whose self-presentation can be best examined, a larger sample of actions allows for patterns and techniques used by individuals to be more readily identified. Affinity-seeking is something which can be seen even outside the core notable individual group but in terms of assessing its place in influencing the social validation and establishment of credibility it holds a disputed place. As the majority of the individuals within the community are believers in the concept of climate change and appear to accept the conclusions of the IPCC report then affinity-seeking would appear to be an idea which would correlation positively with the acceptance required to gain credibility through social validation. As highlighted by Jucks and Thon (2017) large scale social validation is just as important to individuals in evaluating the trustworthiness of information as the validation of an expert. Skeptics in this sense would be at a disadvantage as validation is denied to those who do not join the consensus opinion. On the other hand, there is a view shared by something within the discourse, and the wider skeptic community beyond this research, that those who believe the IPCC reports are blindly accepting a false narrative. Given this, it is possible that affinity-seeking could be seen as a weakness. This weakness is not only possible among skeptics seeking to undermine their perceived opposition but also by community members who advocate each individual seeking information and reaching conclusions independently.

As the discourse studied in this research is a political as much as a scientific one, arguably moreso, self-monitoring and Machiavellianism could be conflated as being exhibited through similar behaviours. Behaviours which Marwick and Boyd (2011) in their study of the self-presentation of Twitter users identify as resembling the practices of 'micro-celebrity'. Self-monitoring is the more difficult of the two strategies

as if it is successful then the behaviour of the individual should appear to be completely natural and as if it isn't being acted out deliberately.

Within the analysis there was evidence of individuals attempting to damage the credibility of other individuals by questioning the validity of their contributions or even accusing them of being 'sock puppet' or fake accounts being used to spread bad information maliciously. While there is no evidence which this analysis found to support these claims they are not a unique or exceptional practice of this community alone. In online culture the practice of accusing others of being 'shills', 'sock-puppets' or that they are engaged in 'astroturfing'. While the extent to which astroturfing occurs is unknown evidence suggests that where it is used it is an effective technique (Cho et al., 2011). Given the limitations of the data available to this research to say that these accusations are true the evidence from elsewhere suggests that in practice it is unlikely that an individual would be engaged in one of these practices. However, that does not mean that they are not real to some degree. The laying out of targeted messages through authentic sounding voices is one which exists in both media and political discourses either as a tool of advertising or to promote a particular political position.

That these have been some of the go-to calls to attack other individuals online would seem to indicate how important credibility is within this discourse. If someone is seen as being inauthentic then the validity of their information is no longer an issue, an inauthentic individual who lacks credibility appears to be an individual who is now denied a voice by the community. This is an interesting addition to the notion of perceived credibility and its importance to the reception of information. The immediate and direct interactions within the Environment Subreddit from which the data was collected for this study are between individuals with the responses forming an ongoing multi-tiered discussion meaning that however rooted in an engagement with the subject matter individuals are the interpersonal dynamics of the community often over take explicit review of the information sources others share. It is in this communication that the issue of an individual being considered inauthentic can become problematic. If an individual is no longer considered a real participant in the discourse by the others then their information is regarded with suspicion or outright rejected as well.

This is problematic because even if an individual were to fall into one of inauthentic roles outlined above this does not mean that the information they share is necessarily equally questionable. In the cases where the accusations were levelled in this study it appears to be part of a disbelief by some forum members that an individual could hold contrary beliefs to their own. That the only reason why contrary beliefs could be held must be because of an external agenda and that any supporting information for that belief must be questionable if not completely fabricated.

While as stated previously there was no evidence for individuals who faced these accusations being guilty of them within this study there is also no way from the data collected to disprove them either. This is perhaps where the true strength of the authenticity attack lies as it undermines not only an individual but the sources they provide in support of their positions too. In addition to this the position of trustee status for an individual in approving the statements of others is lost as well. If Individual A is lacking in credibility and they support Individual B in their discussion with Individual C then B's argument could be weakened by the perceived dubiousness of A. Even if the rest of the community do not believe A to genuinely be a 'shill' taking money in order to spread a particular position the idea that they and the information they approve is questionable could linger and as will be discussed later in this chapter the conflation between individual and information appears to be one of the key factors in determining the validity and credibility of both. Maintaining a presence in an online discourse requires a concerted effort and the expenditure of a great deal of social capital. As Ellison et al. (2014) state the maintenance of relationships on social media, Facebook in the case of their study, requires a great deal of input from an individual but the individual is rewarded with access to information and social gains. In the context of a discourse such as the Environment Subreddit establishing credibility in the eyes of other individuals is part of the capital investment required to gain that additional level of engagement.

If the attack on credibility can be seen as an effective tool to undermine another individual within the discourse it is in part because the most effective way to articulate an argument is through the building of a strong base of credibility by an

individual. This is achieved through self-presentation and the manner in which others perceive that individual and the intended and unintended messages their behaviour sends. As discussed in the development of the working conceptual framework in the literature review, Chapter 2, these two strands come together as the result of several smaller influences which can alter the perception of an individual. It is important to note that there is not a clear distinction by which to say that self-presentation is inherently deliberate and the perception by others is all unintended although the latter is more likely than the former.

5.2.2 Source Ownership

One aspect of the individuals' place within this study and the influence they have on the perception of information, and the reception and interpretation of its meaning, which was not anticipated at the onset of the research or by the review of existing literature was the conflation between individual and information. It had been anticipated that the line between creators of information and consumers of information had blurred or had even disappeared altogether in certain aspects of online society. What this was assumed to mean was that, with the increasing ease with which information can be published online, the types of sources which might be shared while discussing a topic such as climate change are no longer just the views of traditional experts or the established press. Anyone who is interested can now publish an opinion or interpretation of the issue. This disruption could take many forms through social media, forums, blogs or news or activist websites which encourage 'citizen journalism'. The latter is a factor which often blurs the line across all the other forms. As Campbell (2015) writes, the notion of a citizen journalist is not just a reconceptualisation of what defines a journalist but the relationship with the individual as an active citizen. This blurring continues throughout the quantifying of source-types shared within the data for this study. There are numerous non-expert and non-traditional, or establishment, sources being shared alongside more mainstream news articles and expert publications. This approach can lead to issues regarding credibility of sources, as Carr et al. (2014) highlight, as individuals may come to doubt established media in favour of citizen sources. However, while this rise of the non-expert-expert is one which is important and will be discussed later, the factor which had not been anticipated were issues around how and by whom the information was published.

Within the discourse there appears to be a conflation of individual and information which sees the information defined not by its content but by who shared it. In this sense whether a piece of information came from a traditional news-media website, a government source or a blog post it was seen as belonging to the individual who shared it and the credibility of that piece of information becomes tied to the sharers own. This conflation grants the individual who shares the information a proxy-authorship of the information. In the moment of conversation within the discourse sources are no longer, for example, a Telegraph article but they now belong to Individual A and interpreted by others as if Individual A were responsible for their content.

This is not to say that individuals act as if they believe a proxy-author is the actual author of the information they share but the proxy-author does now become answerable for any comment they may have regarding its content. The dynamic of discussions surrounding sources is not one of communal curiosity but is rendered far more oppositional with the proxy-author now defending any claims made within any information they share and answerable for any criticism fellow forum members may have. This responsibility is problematic for several reasons, firstly if the proxy-author is lacking in credibility then information associated with them maybe dismissed without being read, secondly if the proxy-author lacks the ability to properly articulate a piece of information then its original meaning maybe distorted or lost. Third, if a proxy-author lacks the ability to properly defend a piece of information then a valid piece of information may lose credibility if they are out argued by a more skilled, yet perhaps incorrect, attack by another individual. Fourth, a proxy-author with higher credibility may be able to introduce weak sources and their endorsement lends the information more validity than it may originally have had independent of their endorsement.

Proxy-authorship has consequences for the conceptualisation of information with regard to its definition in the conceptual framework developed for this study too. If information can have its meaning effectively rewritten in this manner then the definitions used in the construction of the conceptual framework could be bypassed resulting in valid information being rendered questionable and questionable

information valid through the perceptions and interactions of the forum members. Of course, this altered perception would only exist within the context of the particular forum or social context for which an individual was perceived as the proxy-author but as each instance on every forum would have its own proxy-author then it is not a case of an alternative meaning being constructed but a new interpretation being born independently in every instance.

Given this idea that proxy-authors take possession of a piece of information and that the credibility of the information is dependent of the perceived credibility of the proxy-author then what are the consequences for other forms of validation of information? Social validation of information and the credibility of an individual are not new concepts but, with the altered dynamic suggested by the creation of the proxy-author, social validation could become the be-all-and-end-all with regard to authentication of information. As Westerman et al. (2014) found the recency of a message can affect its credibility and Robertson et al. (2013) found that political messaging in online discussion was influenced by 'in' groups and 'out' groups. It could be that individuals taking ownership of sources helps cement both of these findings. A trusted individual known to be 'in' or 'out' is relied upon to provide information quickly, or perhaps the other way around, that certain individuals who respond quickly are trusted as reliable. The individual and their credibility taking primacy over the original source, if correct this could be considered an unanticipated but large and important factor in what it means for information to become effectively subjective. It is unclear what this disassociation could mean for the original publishers of the information but questions as to whether an author or publisher themselves could be co-opted by proxies could prove problematic for conceptualisations of information in digital discourse.

5.2.3 Interactions with Others

Over the course of the discourse the interactions with other individuals was one of the key components in helping to determine the type of user that they were and their position within the community. Section 4.4.3 on Role-taking saw how the notable users were able to build personal presences within the discourse through the character of their contributions. While a lot of this took the form of their own contributions, the user *pnewell* for example, would be considered an Advanced User

according to the classifications defined by Brandtzæg (2012) due to their behaviour being strongly that of frequent contributions which brought new information to the discourse. However, this is quite an indirect form of interaction with the wider community.

There are consequences for the character of the discourse that must be discussed in relation to the manner in which individuals interact with one another directly. The character of individuals' behaviour online has been characterised as being more aggressive and hostile than face to face interaction. Suler (2004) highlights six factors which could lead to this alteration in behaviour; dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimisation of authority. The question arises whether these individuals are acting as their true selves or whether their identity is a performative one. In this research project there was only a small number of individuals with significantly large contributions that this character of their contributions could be considered. The contributions these individuals made appeared to be in-keeping with the idea that in online debates individuals who express opinions which fit within one side or the other tend to re-enforce their positions and increase the polarisation of the debate (Yardi and Boyd, 2010). As the period of the discourse which was sampled was taken from a forum which was already well established, it must be assumed that the identities of the individuals within it must too be quite well established and their relationships mature. Given these factors it would appear that the individuals within the discourse are well defined by their relationships with the other users. The extent to which generative role-taking has taken place means that each of the notable users has a clearly defined position within the structure of the discussions. Antagonistic individuals are known as such and appear to behave accordingly, so to individuals who make attempts at calming rational interventions are known for doing so within the community.

It is curious that individuals fit such established positions within the forum as several interesting behaviours were observed that may have caused these positions to become established or have emerged as a result of them. First, is that within the longer captured threads, and noticeable across, the entire dataset was that there were recurring patterns of individuals who repeatedly engaged each other in

disagreements. It was decided to label these interactions as 'duelling pairs' as in the instances in which they engaged it was typical that other individuals within the thread effectively stood back and the pair would interact with only one another. One interesting facet of the 'duels' is that in most cases they quite quickly turn into *ad hominem* arguments. As these debates turn personal the sources of information that the individuals have been using are targeted as being disreputable because that particular individual had used them. This suggests that the concept of the proxy author, first raised in Section 4.4.2 and discussed in more detail in Section 5.2.2, is one that is consciously or not, acknowledged by the individuals within the discourse. Arguments can be made against other individuals which are used to discredit their positions and the information they use to support those positions.

A related interaction which also seems to colour the perception of individuals and the information which they are sharing is process of barracking them. Less common than the remarkable and unpredicted presences of the duelling pairs, barracking takes the form of an individual receiving repeated and sustained criticism for the posts which they are making. This appears to have two main effects; first it is an attempt to silence the argument made by that individual by berating them into submission. Secondly, it could be an attempt to delegitimise any information which that individual is attempting to share. The effect on the perceived credibility of the information would be similar to that of calling into question the proxy author. If one of the distinct types of interaction is to swarm opinions or information which are not deemed acceptable then those sources can become delegitimised. While an argument could be made that this could provide a gatekeeping effect where the community takes a proactive collectivist approach to policing their intellectual borders, there is a concern that unrestrained behaviour like this would be damaging to the community. A walled garden effect like could arise and while Paterson (2012) writes that it is a technological phenomenon confirmation bias could result in individuals purposely erecting their own (Ecker et al., 2014). If individuals who barrack opinions or pieces of information that they disagree with then perhaps the risk is that the culture of an online community could become hostile to contentious information or ideas which are held by a minority of participants. Given that most users of a website such as Reddit are not high volume contributors, it could lead to a process of the louder voices drowning out other views. Not only are many individuals not high volume contributors

but, as Buntain and Golbeck (2014) found, it is rare for individuals to participate across multiple Subreddits too. This means individuals' interactions are largely limited to single issue discourses. This could be one manner in which it could be said that information becomes effectively subjective in the unknowledge economy. Individual small orthodoxies in which certain information is accepted and conflicting ideas rejected, while on neighbouring websites the information regarded as 'true' is entirely contradictory.

5.2.4 Nature of Online Social Space

The nature of the Environment Subreddit has consequences for the findings for this research as it colours the character of the interactions within it. This nature extends from base functionality of the website through the established formal rules which the moderators impose, to the informal unwritten rules of online social interaction. These unwritten rules themselves contain both general and website specific conventions regarding language. Transgressions, such as those of the individuals discussed by Bergstrom (2011), can have a detrimental effect on the credibility of the transgressor and all who interacted with them as well. The conventions of Reddit in particular are known as Reddiquette (Reddit, 2013d) and are built around keeping the site as free from hostility and abusive or illegal activity on the site. However, as Reddit is such a large website the enforcement of these codes of conduct as not always been as strict as some believe that they should be (Hern and Bengtsson, 2015). One counterbalance to the perceived free-for-all of the general site rules is that each individual Subreddit is maintained by moderators and each Subreddit also has its own rules. The house rules of the Environment (Reddit, 2013c) include several that have a direct effect on the type of information shared within the forum as well as additional rules on behaviour and abuse beyond those of Reddit itself. All posts must be in English, individuals cannot 'editorialise' the headlines of articles they share, and satire, memes, petitions, fundraising, spam and standalone images are all banned from opening posts. These rules are all designed to maintain the integrity of the discourse and prevent 'bad' information. In addition to these rules, interestingly, the rules also state that an individual must not exceed more than 10% of their submissions to the forum being from the same source.

If an online social space is policed as Environment is then the flow of information is curated and restricted by the moderators as well as by those individuals who've taken on the roles of gatekeeper from within the community. While the analysis within this study found no evidence that the forum rules had had a negative impact on the content of the discourse - the information discussed was broad ranging in terms of both views and quality – it must be noted that this may not be the case across all of Reddit. Of course, in moderating a Subreddit there is a balancing act to be made between policing the status quo, encouraging community participation and managing the influx of new individuals to the discussion (Kiene et al., 2016). Beyond Reddit this type of curation and restriction by moderators or other authority figures may also not be as clearly stated as it is in the rules of the Environment Subreddit. As York (2014) states, social media is not a public space and the individuals who chose to use it will always be doing so with the permission of those who own and control the platform. The controversies around censorship by moderators did not arise in this research but is an issue of great importance when considering the role of online social norms, rule-setting and the place of moderators in the structure of online discourse. As discussion by Etim and Slater (2015) suggest there is concern about the freedoms, or illusions of freedom, that online social spaces can provide. Individuals' behaviour online may be different from face-to-face communication in a lot of ways thanks to its asynchronous nature and the anonymity it provides but it is also policed behaviour.

5.3 Information

5.3.1 Changing character of information sources used

As was seen during the analysis phase individuals used different types of information for different purposes. As the working conceptual framework refers to the representation of knowledge it became clear that individuals recognise these forms and place some inherent value and level of trust in them. The opening posts of threads were far more likely to contain, what could be considered, more formal or authoritative such as newspapers, government or NGO publications. Whereas responses were more frequently from less authoritative sources such as blogs or less established online news sites.

This could be a consequence of the role information seeking plays in the discourse, individuals seeking to respond to a message will have additional needs compared to the individual who is beginning the conversation with a blank page. Savolainen (2012) discusses the effect of context on information need and how this alters the manner and effectiveness of individuals' information seeking. Other factors such as time (Savolainen, 2006) and personal outcomes (Kari, 2007) of seeking and sharing information also alter the individuals ability to source information. There is complexity in attempting to unravel why less formal sources are so much more widespread among responses than opening posts however the explanation may come if the branch of the conceptual framework is used where information is to be understood as a commodity.

5.3.2 Information as a commodity in a social market place

If information is seen as a commodity or currency in online discussion, able to establish the credibility of the individual who shares it, gaining both them and their arguments further status. Status is gained both through the respect one may gain for sharing valuable information and as one becomes a proxy author an individual is able to self-validate their own arguments as the information they share becomes more highly regarded. In analysing news sharing online, Long et al. (2014) found that one factor which influenced individuals' behaviour was their self-perception as opinion leaders. This echoes analysis and findings from this research with regard to role-taking and perceived credibility within the community. Individuals are able to build identities for themselves through the information they are able to present to the community and the reactions of others to it. In this regard, information becomes a currency with which status may be purchased.

One complicating factor which could explain this distinction between the information used in opening posts and responses could be the types of ideas raised. As discussed in the analysis the Environment Subreddit was a forum upon which the orthodoxy held that man-made climate change does exist and is a problem. Given this is also the consensus position among academics and governments then any voices which sought to dissent or present alternative narratives would necessarily be having to reach for less mainstream and less established information to further their

argument. This appears to partially contradict one of the key frames of the ACRL (2016) framework. In discussing the frame 'Information has Value' the authors of the ACRL framework make the assertion that the value of information stems from its content, its ability to inform, educate and enlighten. This aspect appears true of how opening posts appear to use information. However, while this may be the case for the opening posts, and within the higher education context for which the framework was designed, it does not appear to be the case within the responses.

Among dissenting communities there can be credit to be gained from finding additional information which questions the so-called official news narratives. This 'collective intelligence' (Bessi et al., 2015) is one way in which 'misinformation' can become self-reinforcing. Communities can become swayed by the idea that they are uncovering some deeper hidden truth which has been censored in some way by the conventional media. This type of conspiracy ideation is seen by Lewandowsky et al. (2013a) as one of the drivers for the rejection of science in some communities. This returns to the idea of information as a commodity, while conventional thinking may assume that it is valuable to have the correct information in online discourse it appears as if there is value in having novel information as well. Even if that information proves to be untrue there is worth in holding the information and being able to dictate the narrative and conversation within a forum. As a commodity, the value of information in this context is not in its ability to educate as the ACRL framework posits. Instead, the value appears to be in providing the appearance of weight to any argument, factually accurate or not, that the individual seeks to make. Information and misinformation become one in the same in this context.

This does not mean that misinformation is necessarily deliberately spread by individuals seeking to cause harm. It could be the case that factors such as poor information literacy, the desire to uncover a hidden truth, the appeal of novelty or the influence of a trustee or proxy author could lead to its spread. Lewandowsky et al. (2012) explores how these falsehoods can be spread by the well-meaning as well as the mischievous but notes that it can be very difficult to reign them back in once they have begun to spread.

As a commodity, information, even misinformation, is incredibly important as in online discourse where anonymity removes many other factors which can be used to establish credibility. This is exacerbated by informal text-based communication which can muddy an individual's tone and intent. As such it is in being able to exhibit that one has sources, accurate or not, through which one's arguments become more valid in the eyes of others.

5.3.3 Consequences for understanding of information

The consequence for understanding information becomes worrying as these ideas portray any demonstration of information, even false information, as more valuable than exhibiting none to support a point of view. This can make it very difficult to persuade individuals to abandon misconceptions that they hold (Ecker et al., 2011). However, there is some counterbalance in the way that a forum such as the Environment Subreddit operates.

The structure of the website means that there is a ranking system which results in pages being arranged according to votes of value rather than arranged chronologically. The idea that information is a currency and a commodity in these forums is tempered by the idea that individuals can gain higher rankings for the content that they share if it is deemed valuable. This effectively creates a community filter for the information shared within the forum. While this is no guarantee of successfully managing misinformation, that it allows every user a say in gatekeeping rather than just a handful of individuals, means it is less likely that a mischievous or misguided individual can create widespread confusion. This dependency on 'aggregated trustworthiness' (Jessen and Jorgensen, 2012) appeared to steer the discourse captured from the Environment Subreddit away from so-called 'clickbait'. Clickbait being a form of misleading or misrepresentative presentation of information, is a potentially highly damaging development in the evolution of misinformation (Blom and Hansen, 2015).

The protections which complex degrees of social validation provide are robust but not comprehensive; the risk of confirmation bubbles persists as the walled gardens of the current internet landscape results in misconceptions becoming entrenched (Paterson, 2012). As then Prime Minister David Cameron said to the 2015

Conservative Party Conference “Britain and Twitter are not the same thing” (BBC, 2015). It could be easy for the same filters which protect communities from misinformation to instead reinforce those misleading messages. The value in information as a commodity only exists as long as the community deems certain forms valuable. The counterpoint to this is evidence that individuals still acknowledge and place trust in representations of knowledge with credibility, which extends beyond digital discourse and the misconceptions that can arise within it. So long as there is still some recognition of outside authority and perceived objectivity, the understanding of information is not completely dominated by the individuals who have adopted gatekeeper roles within a discourse.

5.4 Framework

In Chapter 2 a working conceptual framework was developed. This framework took the form of two diagrams which illustrated the defining elements of the individual and information within the context of an online information use environment. This framework, as used during the data analysis formed the thematic template through which the interpretations of the user interactions in the Environment forum were made. As part of this process, and as discussed above, the focus of which elements were the most relevant came to help build a wider understanding as the nature of the discourse and the patterns of influence which could be observed within.

In drawing this discussion of the research findings to a close the original working conceptual framework is revisited and reconceived having been adapted in line with the outcomes of the research. First the framework elements which comprised the definition of the Individual are remodelled. Secondly the idea of information is examined and finally an attempt is made to marry the most important elements from both into a single unknowledge framework. This final framework is an attempt to combine those features which form the defining characteristics of a confused and complex information use environment.

5.4.1 Reconceptualising the Individual

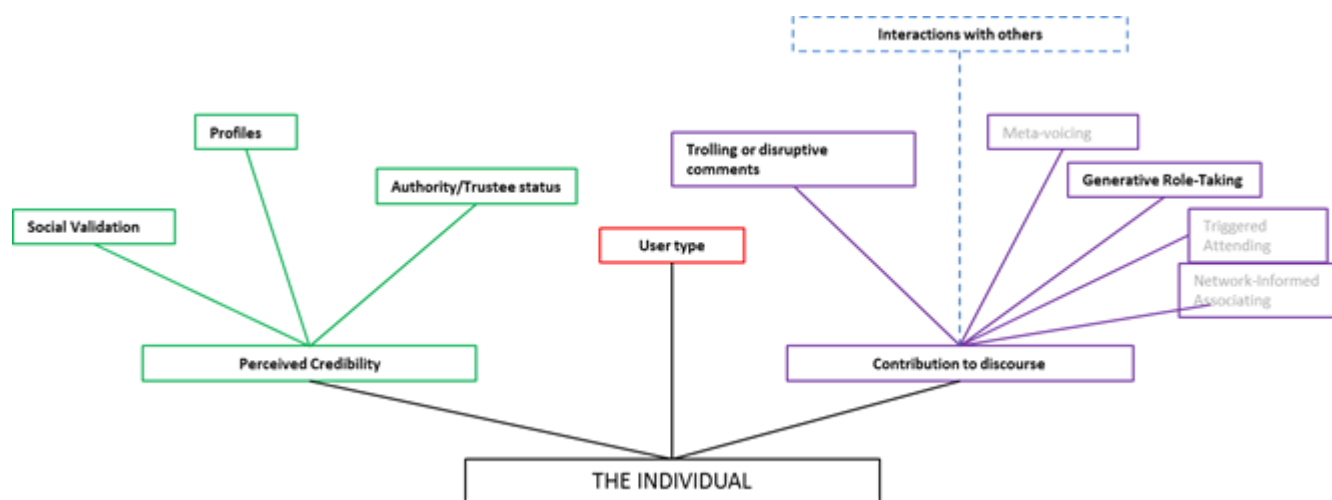


Fig 5.1 Reconceptualising the Framework of the Individual

This evolution of the working framework for the individual's primary changes was driven by the behaviour of the individuals who took part in the discourse. Having originally been based up on the existing literature on how individuals act in online environments the framework branched into two prime strands. These strands focussed on the ability of the individual to define themselves within the online community and the manner in which the community defines the individual. This was the focus of the research was on the place of the individual in relation to others taking part in the discourse and the possible effect that this could have on the information that they are discussing and sharing.

In the new conceptualisation there are elements which have been greyed-out, showing their lack of importance as well as others which have been emboldened to mark their significance. There is also the additional change that one of the elements previous a sub-branch has been moved to become a standalone theme itself.

This new standalone addition to the framework is the 'User type' definition. While this had originally been a sub-branch to the contribution to discourse theme which conceptualised self-presentation within the community it became apparent that it was too restrictive to define 'user type' as being a sub-theme of self-presentation. 'User

type' in this case distinct from 'role-taking' as the role an individual adopts is a semi-conscious performative action whereas their 'user type' is defined not in character or content of their action but in the mechanics of how they interact with the discourse. Therefore, it is now easier to understand and illustrate that an individual may present their arguments in a way that seeks to present themselves as a new gatekeeper or validator of information but that the level of their involvement within the community is an additional, independent, defining factor in whether or not this self-presentation is successful or not.

Of the branches which retained their original positions the importance of balancing the themes so that those identified as the most significant are highlighted as the most important within the new conceptualisation of the individual. In the context of the discourse it became apparent that the most important element in how an individual was defined was not how they presented themselves or the knowledge claims which they made for their statements but how this was received by the community. In recognising this this reinterpretation of the framework highlights the themes which deal most closely with the 'perceived credibility' of an individual while some of the themes which describe self-presenting behaviour are 'greyed-out' to signify their declining relevance.

During the analysis and as discussed in this chapter the perception of others and the perceived credibility of an individual is perhaps the most important theme within this research. This is because with the conflation of sharer and author, the assumed proxy ownership of sources by those who present them within the discourse, then the perceived credibility of an individual has become analogous with the perceived credibility of the information itself. The elements which inform the perceived credibility of an individual such as whether they receive the validation of their peers, whether they can gain status as an authoritative figure and the profile which they retain within the group are all of increased prominence as well.

Having moved User Type to become a standalone branch of its own the third branch of the framework on the individuals' contribution to the discourse and how they present themselves has had significantly more changes made to it than that which deals with how others perceive oneself. If the user type is now considered neutral

and neither an outcome of external perception or the product of deliberate self-presentation, then what other elements are there that an individual can use to influence their own status within the discourse? In this reworking of the framework it is the elements which draw the most attention to an individual which have been highlighted with trolling or disruptive comments and 'generative role-taking' being the themes which were identified within the research as being those which created greatest influence in discourse for an individual.

Generative role-taking is the position which an individual comes to occupy within the community, while this is partly something which relies on the acceptance of others it falls under the wider contribution to discourse theme as it is the product of the conscious contributions of the individual. While this particular study does not directly question individuals to know their motives so it would not be correct to say that they are deliberately setting out to create a position for themselves as a gatekeeper of information or as someone who fact-checks and questions others with the motivation of achieving additional status for themselves; however, that they do engage in these activities, regardless of motivation, does imbue them with additional status. It is in this sense that the term 'generative' is retained in this definition of role-taking as the process is organic, individuals actions over an extended period creating settled hierarchies based upon how they have presented themselves to the community.

Trolling or disruptive comments may initially appear a poor way to judge the influence of an individual within a conversation as the negative connotations of the terms within the wider analysis of online behaviour tend to suggest such commenters are abusive or perhaps worse. However, in the context of this research it was observed that as a form of contrarianism, rather than abuse, these kinds of contributions fuelled many of the longest and most productive discussions in terms of widening the debate around a topic or on examining the claims of a particular source. To this degree, although these users were widely criticised by their peers the space they occupied in the discourse appears to be very important, if not necessary in stimulating the discussion and driving the examination of ideas.

As a defining theme by which the activity of an individual taking part in digital discourse maybe analysed and influence judged then the ability to disrupt and

influence the conversation in that manner stands important enough to be retained as a defining element of their presence. It is also kept distinct from the generative role-taking aspect as although it could be considering a taken role itself it is less organically done so than the definition of generative role-taking allows. As well as this it is distinct and interesting enough as a theme for investigation that it warrants highlighting as an aspect of contribution to discourse in its own right.

While aspects which were less clearly identified or not applicable to the data set of this research were downgraded there is one theme regarding the interactions with others which is placed as a sub-branch to the contributions to discourse. This theme was problematic as initially it appeared that the interactions with others was an element dependent on the contribution to the discourse made by an individual and while this is where it remains in this iteration of the framework it has been done with qualification. This aspect spans both of the original main branches of the framework for the individual – perceived credibility and contribution to discourse – particularly so as perceived credibility is the branch which deals with the response of other community members to an individual; however, as it stems from the direct communication from one individual to another, thus being a projection of self-expression and contribution into the discourse. It remains distinct from the other themes within the contribution to discourse branch as it is not necessarily just about an individual's contribution to the discourse. A standalone statement or providing a link maybe attributable to the individual seeking to shape the discourse and while that also occurs within the wider discourse the interpersonal element can draw it out of the context of the existing narrative flow of the discourse. These parallel interpersonal strands and the distinction between them and the wider discourse are an element which would require further investigation and a closer examination into how and why individuals engage with each other the way that they do.

5.4.2 Reconceptualising Information

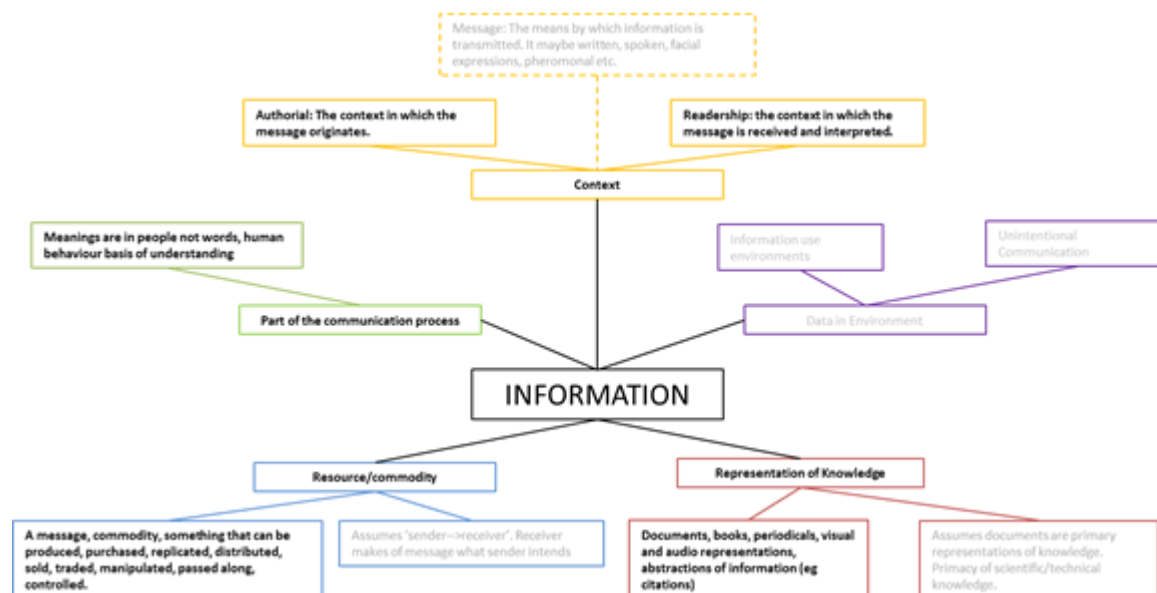


Fig 5.2 Reconceptualising the Framework for Information

When returning to the framework which was used to conceptualise information within the context of this research it was a process which like that of the individual focussed upon the elements, themes and definitions which were most relevant to the discourse and the related behaviour within. The main issue in dealing with the information framework was that as it had originally been constructed from a signal existing definition which was restructured and modelled with the addition of elements from a second it was more ridged and more generalised in its definitions than the framework for the individual. As the research progressed it became apparent that while most of the broader themes remained relevant that only certain aspects of those themes were applicable.

The theme which deals with information as a part of the communication process remains largely unchanged. In the original version of the framework generated in the Literature Review chapter there is a tentative link between communication process and context which is severed in this revision but otherwise the notion that information fulfils this function remains. The link to context was broken as context now stands as a fifth full branch of the framework. This is largely in part to the idea that authorial

context and the manner in which the reader approaches information was seen to be so influential within the data analysis of this research. In particular, the breakdown of creator and consumer as theorised through the notion of a proxy-author, individuals taking ownership of the sources that they share, was deemed a significant break from what was originally conceived as the usual communication process that it warranted its own distinct conceptual theme within the framework.

Due the context in which the discourse analysed took place, all within a single website which uses a standardised messageboard format for all of its subforums the branch regarding information in the environment became inapplicable to the analysis of the discourse as conducted within this research. As the contextual surrounding of every page was identical or near identical and the captured data could not provide any substantial evidence as to any individuals' surroundings as they contributed to the discourse then there effectively was no environmental context which could be analysed. While recognising that every individual was joining the discussion from their own personal environment which would have been rich in information stimuli, the data collected and analysed for this research only provides the plain generic template of the webforum and the content of the discussion as it took place. Thus as this revised framework is frames the conceptualisation of information as understood within this analysis this particular element must be reduced in importance and has been greyed-out of the diagram appropriately.

Information as a resource or commodity became a theme which was particularly strong within the data analysis and one which came to help understand and conceptualise the behaviour of individuals also. In doing so this branch to the framework has been modified in that the assumed sender/receiver relationship does not appear as straightforward as the original conceptualisation proposed. While the notion that information is something which can be 'produced, purchased, replicated, distributed, sold, traded, manipulated, passed along, controlled' holds true the control of its meaning which is implied by the second branch of this strand in the framework is less certain. That information and control of information is vital to the power dynamics within the discourse and roles which individuals come to inhibited is the more important element of this theme. While control of information could lead to an individual or individuals dominating the definition of meaning within the discourse

as discussed above the perception of others and social validation of contribution means that this is not necessarily the case.

The final element deals with information as a representation of knowledge. In the original framework this conceptualisation had two elements, one physical the other philosophical. The physical element remains in the new framework that information is as a representation of knowledge partly defined by what the physical representation of that knowledge is. Traditionally this refers to examples such as books, magazines and newspapers, in the context of this research with all the sources cited being websites these definitions were modified. This means that the representation maybe the website of a respected journal, the website of a newspaper or perhaps the digital e-book of a text. However, while the definitions of what the representation may have had to evolve the conceptualisation that part of what defines a piece of information, as an individual interacts with it, is its form remains. The second branch dealt with meaning, it was the assumption that certain texts and documents can be considered to have primacy over information. This element is the only which is closest to the problem of unknowledge, these old definitions of where the primacy of information may no longer apply. During the analysis of the discourse the notion that some information had primacy over others was indeed under attack, individuals apparently able to provide content which disputed any information provided by any other individual from almost any other source. To that degree the element within the framework was greyed out of the reworked framework. However, as this was a key element in defining the problem which this research posited the evolution of, the framework at this point in the research was meant to reflect what was analysed in the data. This was an attempt to define 'what' is happening not 'why' so this element is revisited when the conclusions return to address the original research aims and objectives in section 6.2.

5.5 Modelling Unknowledge

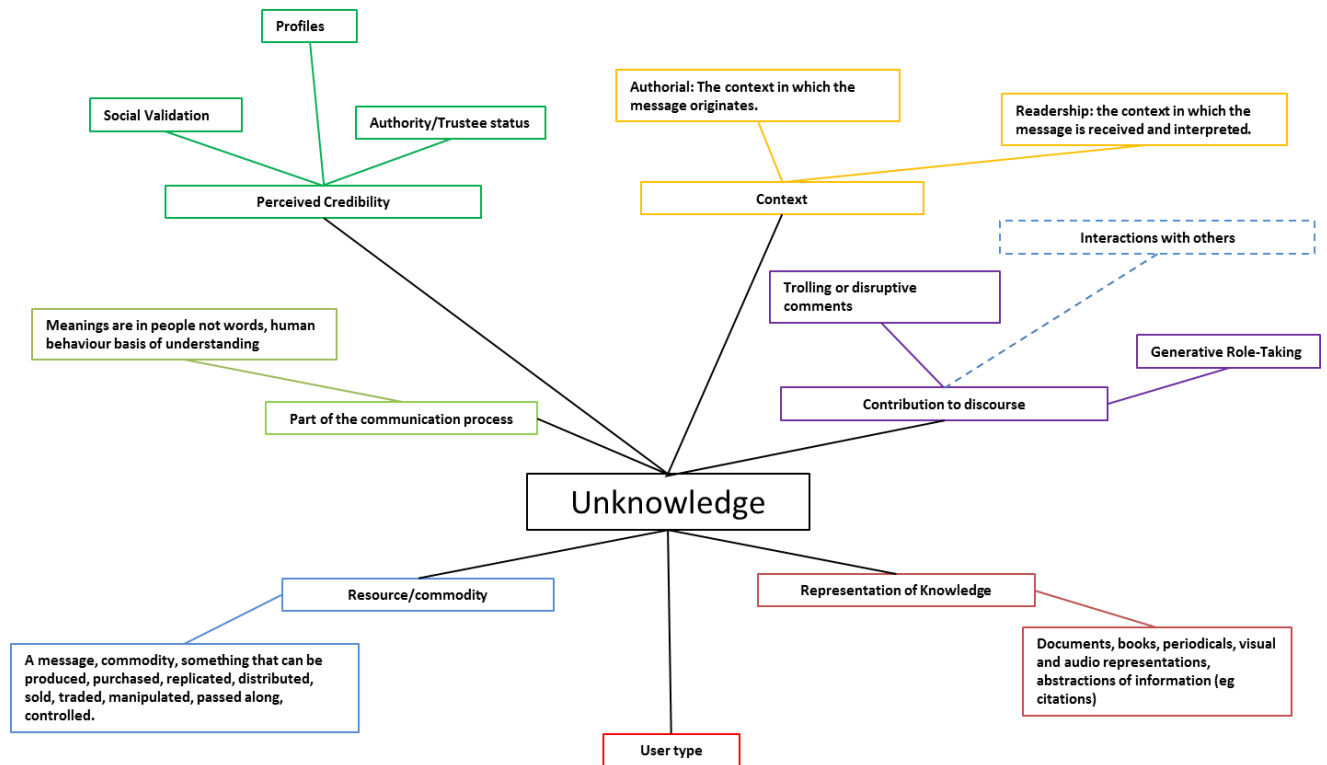


Fig 5.3 Conceptual Framework of the Unknowledge Economy

Following the reconceptualising of the individual and information in sections 5.4.1 and 5.4.2, the working conceptual framework was revised one final time to create a unified conceptual framework for unknowledge itself. This conceptual framework brings together the revised elements of both of the previously separate conceptualisations as the unknowledge economy as it has been posited within this study is a multifaceted concept that is acted out both by and upon the actors it effects.

The notion of a proxy author describes the way in which the perceived credibility of an individual can significantly alter the perception of a source, and yet within a community the type on information individuals share can be a route to gain credibility. This interconnectedness is part of what is described within this final framework. If the unknowledge economy is a conceptualisation of uncertainty and

shifting credibility as a bar to understanding information online then equal weight is placed across the framework to every element. This is not to be confused with the fog of war or a state of too much information drowning out distinct voices, however, as it is through the behaviour of those within the system which keeps the constant shift of meaning and understanding moving. As the individual is the motivating factor and the various forms information takes cause for further evolution the perceived meaning, the effective subjectivity of any single piece of information is as depended on its form as it is the context or the intent of its use. It is this complexity which the conceptual framework for unknowledge seeks to capture.

Chapter Six

Conclusion

6.1 Introduction

This concluding chapter begins with a summation of the research conclusions and statement of the contribution to knowledge. These sections form of a review which links the findings and outcomes of the analysis and discussion chapters with the original aims and objectives of the research. In doing this the central premise of the research problem will be addressed and from there the contribution to knowledge is outlined. Following these sections is a reflection on the research topic and the evolution of online discourse since this piece of research began. This reflection informs the following section which explores potential avenues for future research. The final section of this chapter are the closing remarks for this thesis and the research project that it captures.

6.2 Aims and Objectives Reviewed

The principal aim of this research project was to develop a conceptual understanding through which the multifarious roles of the individual, in the context of the unknowledge economy could be better understood. This meant examining a research context complex enough to achieve six objectives. Here the objectives are presented alongside the discussion of key points most relevant to their demands:

6.2.1 Defining Key Concepts of Terminology

As discussed throughout chapters 2 and 3, the literature review and the methodology, the initial terminology used for this study was developed from the existing literature within the field. This took the form of appropriating and where necessary interpreting the terminology found in the literature so that it was best applicable to the context of this study. This initial groundwork formed understandings of information, digital and media literacy, trust, perceived credibility, individuals and information itself. The key concepts of unknowledge economy, digital discourse, effective subjectivity and what trust came to mean within the context of this research, guided by the research itself, evolved from this grounding in the existing literature.

In Chapter 5, the discussion, the unknowledge economy is expanded upon as part of the evolving conceptual framework. As the findings were brought into the working model, developed in Chapter 2, the definition of the unknowledge economy grew in clarity and depth. As a key concept of this study, unknowledge economy, was defined as the system of interaction between shifting conceptualisations of the individual and information. This is a sphere in which uncertainty is produced by the perceptions of credibility in information created by the manner in which individuals behave in distributing and legitimising information through the influence they have upon other individuals within the discussion.

Digital discourse, as understood within this research, was defined as the context in which individuals interact online. It takes the form of social media, discussion forums, website comments sections, and self-publication platforms such as blogging websites. It also encompasses the environmental noise of information which surrounds these interactions, particularly as the line between creators and consumers becomes ever more indistinct all online content comes to form the contextual cloud in which individuals act. Digital discourse in this sense is distinct from wider socio-political discourse within the print media and in face-to-face interactions between individuals, replicating many of the same arguments, it has dimensions of scale and time which cannot be reproduced offline. For example, within digital discourse individuals are able to communicate with thousands without having to gain the public standing one would have to in order to have such reach in offline discourse. The temporal aspect of digital discourse is one of increasing speed; information, whether a fact or, falsehood can be disseminated very quickly and is not limited by restrictions of geography or status.

Effective subjectivity is a concept which was initially posited within the problem statement of this research, and was an attempt to conceptualise the idea of how a piece of information could be understood in a framework where its veracity is determined by those who read it and not on its 'real' world factual basis. Through the course of the research it became apparent that effective subjectivity may not capture what it was originally designed to mean as defined within the original problem statement. While originally it was intended to represent the receiver-side

interpretation of the meaning within a piece of information, a more apt definition within the context of the unknowledge economy would also need to incorporate a distributor imbued meaning. It no longer appears satisfactory that meaning is encoded by an author and then decoded by the reader who receives the text; intermediary third parties are now able to interrupt this binary process and separate the original author from the meaning of their own work.

6.2.2 The nature of opinion and debate within digital discourse and its role in defining the character of the unknowledge economy

In the critical analysis of the data there were several notable findings regarding the character of the discourse itself, some of which had been anticipated and others which had not. Initial assumptions were that an online community based around a disputed news issue, such as the Environment Subreddit which was the focus of the study, would be defined by the conflicts within it. With a highly politicised issue and a sample taken from the time of a critical incident within the timeline of the news narrative surrounding man-made climate change, this was a 'hot button' issue. However, the character of the discourse within the forum was much more consensual than anticipated. This was in part due to the high profile contributions of the group classified as 'notable users'; these individuals were high volume contributors who appeared to dictate much of the direction and character of the debate during the period which was analysed.

This means that, whereas the accepted wisdom in the mainstream press may be that digital discourse is a tumultuous blur of noise and often anger, the reality, in these findings at least, is somewhat more considered. The consequence for the notion of the unknowledge economy then is interesting. Rather than as expected initially that ideas and meaning are lost in the confusion of many voices all speaking up at once, the unknowledge economy is more structured. The character of the unknowledge economy could instead be best described as being semi-structured and driven primarily by individuals' perceived personal credibility. It is these voices which stand above the noise of the discourse, shape the direction it takes, and legitimise the information within it for individuals of lesser standing.

6.2.3 Cognitive and effective reactions of individuals in response to digital discourse and the unknowledge economy

The objective to explore the cognitive and effective reactions of individuals proved difficult as the nature of conversations which were captured for the research meant that evidence of the cognitive processes that individuals went through could only be inferred in accordance with the characterisations contained within the working conceptual framework. Without directly questioning the individuals involved this picture is likely to be left incomplete by research performed in this manner. Section 6.5 explores potential avenues for future research to address this.

What was found during this research, however, was that the reactions of individuals within the discourse appeared to be rather limited; individuals tended to remain very fixed in their views throughout the period which was examined. While some movement on understanding or opinions voiced was expected, the individuals who provided the most content and the clearest indication of a narrative thread regarding their opinions and reactions to one another, the notable users, all failed to significantly alter their perception of the issues discussed. It could be that a longer sample than four weeks is needed to chart their cognitive and effective reactions. The issue of the sample period is also present in exploring the reactions from the wider user base; outside the small pool of notable users most other individuals in the discourse were extremely limited in the volume of material they contributed.

While some of the reactions of individuals proved problematic to engage with at this level the broader tide of reaction could be seen. There was evidence that the individuals reacted far more positively to certain information sources than others. It appears that cognitive effects such as confirmation bias still hold a heavy sway over many individuals within the unknowledge economy. This bias extends not just to the sources of information, for example climate change skeptics favouring skeptic sources, but also to the types of information in which trust is placed. Individuals whose contributions appear to accept the climate change narrative put forward in the IPCC report were more likely to favour mainstream information sources and conventional news outlets. Those who were seen as questioning this narrative favoured alternative, and less verifiable, types of information such as blogs. The favouring of alternative types of information is perhaps a consequence of a lack of

trust in a wider 'establishment' in society. In this sense information which is desirable is that which is outside of the conventional, thus it is often found on less mainstream platforms.

The levels of engagement and degree of seriousness which individuals regarded different types of information and different techniques of critiquing or engaging with that information demonstrate certain cognitive and behavioural traits which seemed to greatly influence the character of the discourse in this study.

6.2.4 The role of individuals as creators and consumers in the production and distribution of the unknowledge economy

Exploring the role of individuals in the unknowledge economy produced one of the most distinctive results of this study. The role of the individuals was not only vital in the perpetuation of the unknowledge economy but the roles themselves were of a nature not anticipated before the research began. The key conclusion with regard to the question of the creator/consumer binary within information distribution was answered by a concept which is labelled here as the 'proxy author'. This unique role appears to be a breakdown in the hierarchy of trust which has previously been accepted, although it is not a replacement but more a context specific remodelling, as no longer are the original sources of information the arbiters of its validity with readers being mere recipients. The proxy author is an individual who is able intersect the boundary between a creator and consumer becoming a filter and conduit for distributing information, but one which imbues another layer of meaning to the text in doing so. Within a community a proxy author is regarded as 'owning' the information and it becomes only as credible as any particular proxy author is perceived to be themselves. In terms of producing the effect of the unknowledge economy, the effective subjectivity of information, this newly identified role could be a key element in how ordinary individuals can become important nodes in this situation.

This role of the proxy author other factors in individuals' engagement with digital discourse affected the production and distribution of the unknowledge economy effect. The role of 'notable users' was one of the greatest. These are individuals who, while not necessarily influential on a personal level, help to create the conditions and

tone of the discourse. In turn this altering of the mood within the discourse can lead to the community being more or less receptive to particular messages or forms of information. This is especially true during more heated and argumentative discussions in which polarised communities may refuse to acknowledge contradictory information no matter how valid or lower their levels of scrutiny if a piece of information appears to support their position.

6.2.5 Distinguishing between ‘facts’ and ‘falsehoods’ in the context of digital discourse

As detailed in the response to the objective covered in Section 6.2.4, regarding the breakdown of the distinction between creator and consumer of information, the distinction between fact and falsehood is also becoming less certain. The roles of individuals described above are among the contributing factors to this development; as individuals are more likely to place trust in peers than institutional expertise when verifying information the room for errors in this verification expands. The role of individuals in controlling the distribution of sources is also a major contributing factor to one of the most prolifically noted ways in which misinformation was spread in the context of this research.

Within the discourse analysed there was a false equivalency attributed to sources by the individuals taking part. This did not mean that all information was regarded as being equal but it did appear to be considered more equal in its authority than might have been expected. This false equivalency lends information a level of credibility which it might not otherwise be granted, a consequence of which is that not only is a single piece of information which is given raised credibility but also all of the information from that particular source.

Another manner in which the line between facts and falsehoods is blurred in the perception of individuals within digital discourse has its roots in the definition of information described in Section 2.7.1. One of the four branches to the working conceptual framework for information is ‘information as a representation of knowledge’; this is with regard to the form that information takes. While online the number of forms is limited - text, video, image – this understanding of information

was applied more subtly to source types as a way of adding granularity and clarity to the different variations of websites encountered within the discourse. It was found that certain types were favoured over others with newspaper websites being one of the dominant forms of information present all of the issues regarding impartiality and rigour needed to be applied as they would be with physical manifestations of these sources. The case of blogs raised a concern in this regard as they are not held accountable to any standard but the acceptance of their audience. The prominence of blogs as a source of information within the discourse resulted in a large volume of unmoderated information entering the conversation.

The effect on the distinction between fact and falsehood, that having unverifiable sources perceived as being legitimised by key individuals and distributed throughout the discourse, has made it difficult for individuals to be able to articulate sound information literacy skills. This is partly due to the fact that many of the signifiers, which one may use to identify factual information from a falsehood in an established information literacy manner, are lost to the noise of digital discourse.

6.2.6 The role of social media in legitimising information for individuals in the unknowledge economy

As the public space in which digital discourse occurs social media platforms collectively form the landscape where individuals interact and, as this research has shown, it is through these interactions that the unknowledge economy is articulated. As such the role played by social media in legitimising information is in providing individuals the opportunity to be able to influence one another as well as share information. This results in the creation of impressions of the veracity of some sources over others and to, consciously or not, imbue with their own perceived credibility. In this research the role which the platform played in the legitimisation of information appears to be one of reach; the ability to share information and build a personal profile within the community allows individuals to influence others. This process sees information legitimised both in its being shared, its reception and its relationship to the individual who shares it, the proxy author.

The outcomes of this research highlight some unique aspects of individuals' behaviour which go some way to explaining how information is legitimised through its use on social media. However, the interconnectedness of social network interactions dictates that in order to gain a broader understanding a cross-platform study is needed.

6.3 Contribution to Knowledge

This research provides a contribution to knowledge through its development of a conceptual framework through which the examination of the exchange and use of information within a public discourse can be better understood. This conceptualisation of the 'unknowledge economy' is an articulation of how the discourse within an online community can alter perceptions of credibility in a source of information, how individuals can shape this dynamic, and how, ultimately, this could render the information effectively subjective. The veracity of a piece of information, in this context, is no longer dependent on its inherent accuracy but on whether it is perceived as accurate. Information is no longer defined by the meaning and intentions with which its original author imbued it but defined within the context it is shared.

In reaching the theoretical contributions and the development of the conceptualisations of individuals within the unknowledge economy, there were some novel methodological steps which could be considered contributions to library and information science research themselves. Due to the nebulous nature of online discourse and online communities, the development of a methodology using elements of netnography, critical incident technique and template analysis grew organically from the needs of the research. This emergent research design is a methodological tool set which enabled the rationalisation and framing of an issue, a community and the type of data which they yielded into something which could be analysed and understood in a more systematic manner. As online communities are constantly shifting a researcher seeking to understand the discourse which they create requires a methodology which is both flexible and provides rigour. While future research will only see the methodology refined into further efficiency, the form used in this research provides a functional, novel base.

One consequence of this methodology is the data which was collected. This data represents something which should be of particular interest to researchers engaged with online communities, discourse, information literacy or climate change. The collected, sorted and empirically rationalised interactions of hundreds of real individuals over hundreds of separate conversation threads data such as this could prove a valuable resource not just to this research but to the wider field of study.

There are two unique characteristics to the conceptualisation of the unknowledge economy which establish this understanding of digital discourse distinctive. The first is the idea of a higher tier of individuals within the discourse who have been labelled here as the 'notable users'. These were individuals who stood above the others in terms of the volume of contributions they made and apparent influence they had over the direction of the conversations analysed in this research. It is not the case that these individuals were all capable of being influential on the opinions of the other forum users, but they were the ones who shaped the discourse around their own personal narratives. The second of these is the notion of the 'proxy author'. As discussed in Section 5.2.2 this is the individual, most likely a notable user, who shares a piece of information within the discourse and whom the rest of the community regards as taking ownership of that piece of information. The 'proxy author' is a novel concept as it further distances the authentication of information from the original author. Whereas once the original author was the one on whom the onus of being correct was placed, now the proxy author serves as a conduit authenticating it for themselves and becoming part of the authentication process for the individuals with whom they share it.

These two unique characterisations form part of a contribution to the wider theoretical development within the field of library and information science with regard to information literacy. As evidenced by the publication of the ACRL (2016) framework there are trends in the literature which, as models of information literacy, are revised for a post-millennial digital experience. This update in the conceptualisation of information literacy mirrors some of the findings of this research. With individuals becoming more influential and sources of information ever more diverse, it is vital to understand how individuals perceive the credibility of information and the authority which imbues that credibility. The manner in which information is

perceived as a commodity, a unit of cultural currency, too is something which this research touches upon and which must become a key factor in understanding information literacy in the 21st century. The unknowledge economy framework, with its focus on informal online communication, is able to contribute to this theoretical trend by providing a manner in which ideas developed for more formal settings can be applied to an individual's everyday experience.

These outcomes of the research form a contribution to knowledge in the development of a holistic understanding of the manner in which the online discourse surrounding a complex news issue alters, rather than is impacted by, the information about that issue and critical role of individuals in that process.

6.4 Reflection

Since this research project began the politics of online discourse, and the potential for information to become a currency in evermore contentious debates, has expanded greatly. In mainstream electoral politics the focus on social media campaigning has taken a large step forward, and in online communities large scale critical incidents in discourse characterised by 'Twitterstorms' have become more frequent. These incidents and developments have led to what could be labelled the memefication of political anger, a space in which ideas of information and content as currency have reached fever pitch, and credibility is seemingly built upon shareability.

Following the 2016 referendum on whether the United Kingdom should leave the European Union, Viner (2016) discussed how social media has 'swallowed' the facts of the news and helped create a 'post-truth' politics. This 'post-truth' politics chimes closely with the concept of the unknowledge economy, albeit with a greater focus on how the marketisation of news has created the conditions for 'post-truth' politics to exist and thrive. If shareability has become a factor in information becoming legitimised during the period of this research, then the growth of so-called 'clickbait' has been a major symptom. Blom and Hansen (2015) examine how the creation of brief narratives to draw in readers in this fashion, drives traffic to news websites, often at the expense of more detailed factual coverage.

While this research sought to investigate how individuals' actions and the mechanisms of digital discourse affect the understanding of information, and how they could be potential barriers to that understanding, incidents such as the Gamergate controversy (Massanari, 2015, McClintock, 2015, Todd, 2015), the Scottish independence referendum, and the European Union referendum have all seen these ideas move towards more mainstream media coverage. The timeliness of this study could be an indicator that the next challenge for library and information science scholars is in providing explanation and perhaps even solutions for this societal shift in information consumption. Online communities are now no longer the preserve of a select few. As millions now receive their news information through platforms such as Facebook then it will be important to understand the nature of the information being shared and the motives of those who share it.

6.5 Limitations of Research

While this research sought to examine digital discourse and its effect on the understanding and distribution of information there were limitations to the research that inform both the contribution to knowledge and possible avenues for future research. These limitations affect either the design, scope or outcomes of the research.

Firstly, the primary limiting factor in the design of this research was the technical limitations on what could be investigated. Due to a lack of technical skill on behalf of the researcher it was not possible to conduct the research 'live', tracking an incident as it happened, or to provide deep analysis of any additional metadata collected. This limitation has consequences for the transferability of the research findings. As discussed in section 6.2 the character of online communication is influenced by the form it takes, as each social network offers a different user experience, so the behaviour of individuals could change as they move their online persona from one platform to another.

Secondly, in pursuing this research a decision was made to investigate an isolated incident, on a particular forum, regarding a single issue. This could restrict the scope for the applicability of its outcomes in drawing broader lessons for other studies into

digital discourse and information literacy. It was a conscious decision to limit the scope of the research to a single incident rather than pursue a quantitative study which could grant more opportunity for generalisation. However, this decision was one which allowed a more concentrated focus on a particular user base.

Thirdly, there was no direct communication between researcher and subject. The nature of the research led to decisions being made not to interview or survey the individuals taking part in the discourse. This decision means the research addresses what is happening, how it could be happening but does not fully address why individuals act as they do. At a systemic level it is possible to draw conclusions, but not comprehensively, in terms of the motivations of individuals.

By taking the lessons learned from the development of its methodology or the outcomes of its findings, and applying them to further contexts or in manners which were not possible at its onset, it could be possible to address these limitations.

6.6 Avenues for Future Research

When looking at possibilities for future research stemming from this research there are several directions which seem most pertinent and interesting. These avenues for future research are opportunities to test the conceptual framework developed in alternative contexts and to enhance it by pursuing methodological strands not followed in this study.

The first could be an attempt to replicate the research in another context, taking the methodology used here and applying it to another context. The advantages of this would be testing the robustness of the methodology and validity of the outcomes produced from its application during this research project. Given that the development of the methodology used in this research is a contribution to knowledge, a novel manner in doing information science research, then applying it to other contexts and discourses would help broaden its reach within the field as well as testing its effectiveness. This wider application could reinforce not just the

contributions to knowledge made with regard to the development of a the methodology, but also the theoretical and material contributions of this research.

Second could be similar in its methodological focus but, rather than attempting to replicate it in another context, it would continue the development of the framework and concept of the unknowledge economy. This could be achieved by following this research with further discourse contexts, either alternative data sources such as Twitter, Facebook or Tumblr, or groups addressing other issues, such as those involved in issues surrounding the British EU membership referendum, a general election or the GamerGate groups. Whereas the first avenue for future research allows for the testing of the existing methodology and the reinforcement of the other contributions to knowledge, this second avenue aims for further robustness to be built into the methodological approach. Also, the continued evolution and of the theoretical framework could lead to greater insight and more nuance in possible future findings. With the continued adaptation of new information literacy models, such as that of the ACRL (2016), it is vital that models do not become fixed as information use evolves around them. The advantage of this kind of follow up study would also be to continue the development of the emergent framework in a manner which attempts to keep pace with the changing nature of online discourse.

The third alternative direction would be to address a methodological issue which arose during the development of this research and would further the development of the unknowledge economy concept. This would be to track a 'live' issue rather than source an archived critical incident. As addressed in section 6.5, this was one aspect of the research which had been impacted upon by a lack of technical expertise but which in future, perhaps through an extended learning experience or through collaboration, become achievable. In taking the conclusions of this research and applying them forward onto a 'live' and ongoing dataset this possible future research would be the most complex of these alternatives but, in terms of delivering the most relevant, up to date and impactful outcomes, it would be the most rewarding to pursue. In this case, the data would be as current as possible with regard to the issue examined, the sources of information discussed, and the technology used to carry the discourse. It would also allow the researcher to witness the evolution of the discourse as it occurred, providing additional insight into how and why the discourse

develops as it does. This could include being able to see individuals grow into the roles they come to occupy, credibility being established, and duelling pairs forming their connection.

Another direction that further research to take would be to address the question which this research did not aim to address with regard to individuals in online discourse. This research focussed its critical examination on whether online discourse affected the veracity of information in the eyes of the individuals using it and, if so, how this was happening. In investigating the *if* and the *how* of this situation, looking at the interactions between individuals, the types of information being shared and what stock individuals appear to place in that information, the question of *why* individuals act the way that they do was not directly addressed. This avenue for future research would take a very different form as, while it would be rooted in the findings of this research project, it would also require a far more direct interaction with the subjects. However, while it would be a step sideways from the focus of this research, and the possible future research suggested above, it would aid in creating a more robust and complete framework by which to conceptualise the unknowledge economy.

A final potential avenue for future research would be to consider the empirical contribution that this research has made. A dataset containing thousands of messages was captured and analysed. While the previous avenues for future research all consider the possibility of moving beyond this research, developing the theoretical and methodological contributions made by it in new contexts or with different aims, this avenue considers a potential consequence for the existing dataset. Opening this data for research projects with different aims and objectives could yield fresh findings as the complex interactions between individuals and the language through which they communicate. This could take the form of further linguistic analysis or more detailed mapping of the network of connections through which to illustrate and further critically examine the relationships within online discourse.

6.7 Closing Remarks

This research sought to develop a conceptual understanding through which the roles of the individual in the context of the unknowledge economy could be better understood. In seeking to do so it tackled a complex news issue and the discourse surrounding it. In the problem statement a quote from Rheingold summed up the central issue behind this research; “information is no longer unquestionable. It's up to the consumer of the information, not the publisher of the information to test the authenticity of that information ... that's a radical change” (Rowell, 2010). Information has become more uncertain but it has led to a democratising effect. The internet has created a cultural space in which anyone can become an author and filter for the ballooning the number of results when one performs a search. This lends to a fear within the existing literature that the noise of information overload could hamper information literacy.

Ultimately, however, what has emerged over the course of this research is that the unknowledge economy is not the result of noise, but the coping mechanisms which individuals have developed in response to the noise. The roles individuals come to inhabit, especially those who find themselves in a position to shape the views of others, through circumstance or perseverance, means that what seems to shape the unknowledge economy is people and that it is through attempting to understand their interactions that this research has come to conceptualise what is happening.

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Appendix 1 Tables

r/environment							
	On & On	On & Off	Off & On	Off & Off	No Narrativ e Respons e	Total	
13/09/2013	0	0	0	16	36	52	Friday
14/09/2013	1	0	1	18	31	51	Saturday
15/09/2013	0	1	4	12	15	32	Sunday
16/09/2013	5	1	3	11	34	54	Monday
17/09/2013	3	0	0	15	39	57	Tuesday
18/09/2013	3	0	0	16	54	73	Wednesda y
19/09/2013	6	0	4	14	40	64	Thursday
20/09/2013	2	0	2	24	44	72	Friday
21/09/2013	5	0	3	12	16	36	Saturday
22/09/2013	0	1	0	15	17	33	Sunday
23/09/2013	4	0	1	7	19	31	Monday
24/09/2013	6	0	1	19	30	56	Tuesday
25/09/2013	3	1	1	21	45	71	Wednesda y
26/09/2013	4	0	0	5	35	44	Thursday
27/09/2013	8	0	1	10	46	65	Friday
28/09/2013	5	1	3	7	17	33	Saturday
29/09/2013	3	0	0	5	12	20	Sunday
30/09/2013	10	1	2	8	26	47	Monday
01/10/2013	11	0	2	9	20	42	Tuesday
02/10/2013	7	0	1	15	38	61	Wednesda y
03/10/2013	8	0	0	20	34	62	Thursday
04/10/2013	4	0	0	9	27	40	Friday

05/10/2013	0	1	1	14	14	30	Saturday
06/10/2013	1	0	1	10	10	22	Sunday
07/10/2013	4	0	0	9	24	37	Monday
08/10/2013	5	0	1	15	31	52	Tuesday
09/10/2013	6	1	1	11	32	51	Wednesda y
10/10/2013	6	0	0	13	45	64	Thursday
11/10/2013	6	0	0	9	40	55	Friday
Total	126	8	33	369	871		

Table 1: User database

Name	Sources
On & On - Activism	3
On & On - Blog (academic)	2
On & On - Blog (advocate)	4
On & On - Blog (alternative news)	1
On & On - Blog (personal)	4
On & On - Blog (political)	1
On & On - Blog (science)	3
On & On - Blog (skeptical)	3
On & On - Environmental Specialist	4
On & On - Government	2
On & On - Image	1
On & On - IPCC	2
On & On - Journal (academic)	2
On & On - Magazine (business)	4
On & On - Magazine (environmental)	4
On & On - Magazine (news)	7
On & On - Magazine (science)	2
On & On - News (aggregator site)	2
On & On - News (alternative news website)	17
On & On - News (business)	2
On & On - News (local-regional)	5
On & On - News (national newspaper Australia)	2
On & On - News (national newspaper Canada)	1
On & On - News (national newspaper India)	1
On & On - News (national newspaper uk)	17
On & On - News (national newspaper usa)	12
On & On - News (national)	4
On & On - News (news agency)	4
On & On - News (online news site)	7
On & On - News (political specialist coverage)	0
On & On - News (regional newspaper usa)	1

On & On - News (satellite network)	1
On & On - News (science)	1
On & On - News (tech specialist)	1
On & On - Political Media Commentary	1
On & On - Research Tool	1
On & On - Self dot	6

Table 2: Information types of opening posts

Name	Sources	References
On & On Res - Academic (journal)	5	8
On & On Res - Academic (open access)	5	9
On & On Res - Academic (resource)	2	2
On & On Res - Activism	5	6
On & On Res - Blog (academic)	5	10
On & On Res - Blog (advocate)	14	21
On & On Res - Blog (media)	4	4
On & On Res - Blog (personal)	1	1
On & On Res - Blog (skeptical)	10	11
On & On Res - Blog (technology)	1	1
On & On Res - Blog (weather)	2	2
On & On Res - Charity	1	1
On & On Res - Comic Strip	1	1
On & On Res - Environmental Specialist	2	3
On & On Res - Government	8	9
On & On Res - Image Hosting Site	6	21
On & On Res - IPCC	3	3
On & On Res - Journal (academic)	0	0
On & On Res - Magazine (business)	4	5
On & On Res - Magazine (music)	1	1
On & On Res - Magazine (news)	9	11
On & On Res - Magazine (Science)	1	1
On & On Res - Meme	5	7
On & On Res - News (alternative)	5	7
On & On Res - News (environmental specialist)	2	2
On & On Res - News (local-regional)	2	2
On & On Res - News (national newspaper canada)	1	1
On & On Res - News (national newspaper uk)	6	6
On & On Res - News (national newspaper usa)	6	7
On & On Res - News (online news site)	3	3

On & On Res - News (political specialist coverage)	2	3
On & On Res - News (television uk)	4	5
On & On Res - News (television usa)	2	2
On & On Res - NGO	1	1
On & On Res - Online Encyclopedia	2	2
On & On Res - Online Library	1	1
On & On Res - Reddit (subreddit)	5	7
On & On Res - Reddit (thread)	3	3
On & On Res - Research Tool	2	2
On & On Res - Search Engine	3	3
On & On Res - Slideshow (business)	1	1
On & On Res - Television	2	2
On & On Res - Think Tank	1	1
On & On Res - uncredited information	1	1
On & On Res - Video Game	1	1
On & On Res - Wikipedia	9	13
On & On Res - Youtube	3	3

Table 3: Information types of user responses